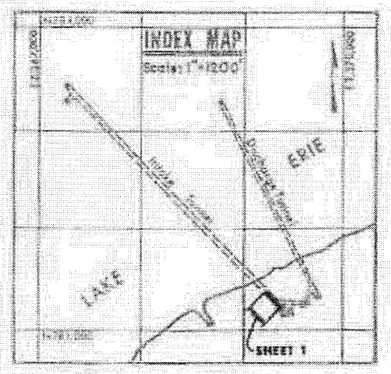
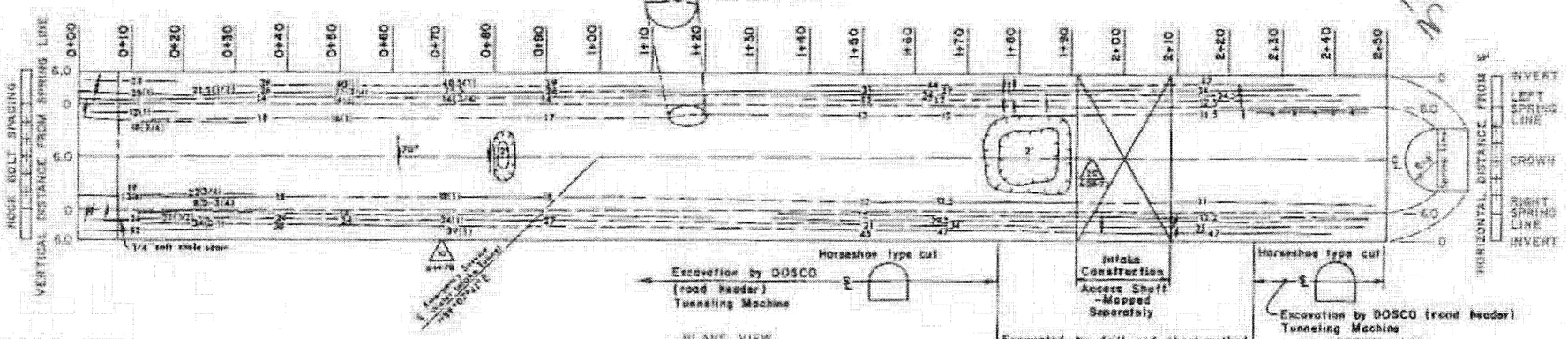


SYMBOLS

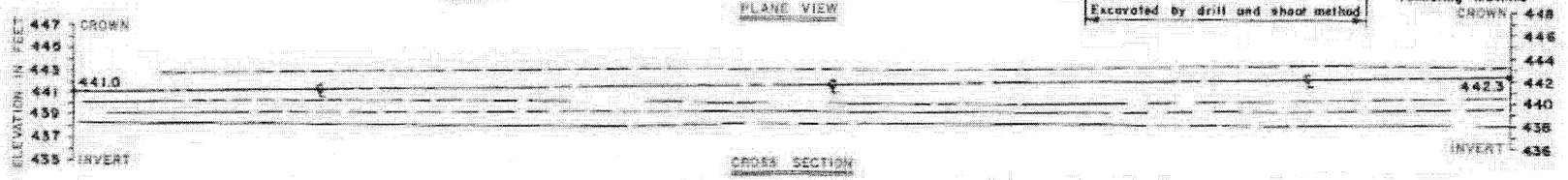
- HARD, TAN, BROWN, CHERTY, IRON BED OR LAMINAE
- DISCONTINUOUS IRON BED
- HARD, LIGHT GREY, SANDY SHALE TO SILTSTONE BED
- DISCONTINUOUS IRON BED WITHIN GREY BED
- FRACTURE
- FAULT
- BEDDING PARTING
- VERTICAL JOINT
- INCLINED JOINT
- BEDDING, STRIKE AND DIP
- MOISTURE ALONG BEDDING PARTING
- SEEPAGE FROM FEATURE
- OVEREXCAVATION OR OVERBREAK ZONE, MAXIMUM AMOUNT SHOWN
- METHANE GAS, MAXIMUM PERCENT L.E.L. WITH DATE OF OCCURRENCE

* Note:
Number(s) in parentheses indicates bed thickness.
Number preceding parenthesis indicates inches above or below spring line at station of measurement.

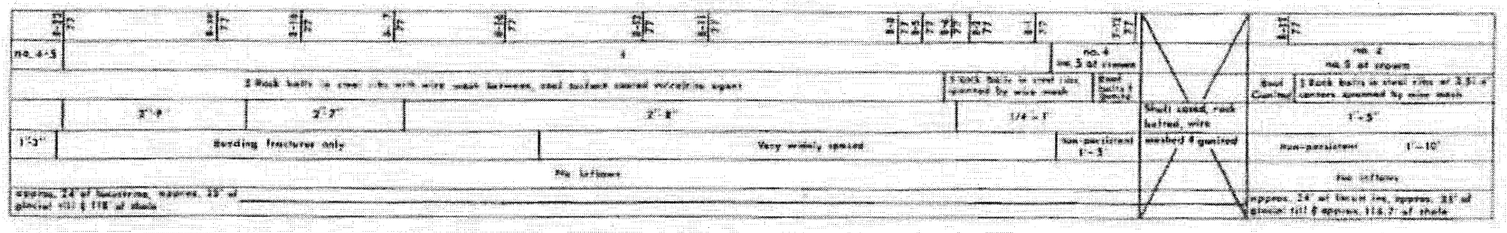
PINCHING IRON BANDS



PLANE VIEW



CROSS SECTION



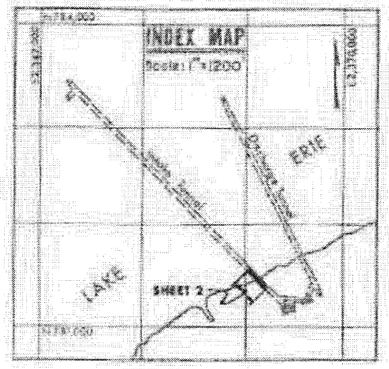
EXCAVATION PROGRESS
ESTIMATED ROCK CONDITION (TERZAGHI NO.)
TEMPORARY SUPPORT SYSTEM
BEDDING SPACING
FRACTURE SPACING
WATER CONDITION
DEPTH OF COVER

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Geologic Map of Tunnel Excavations

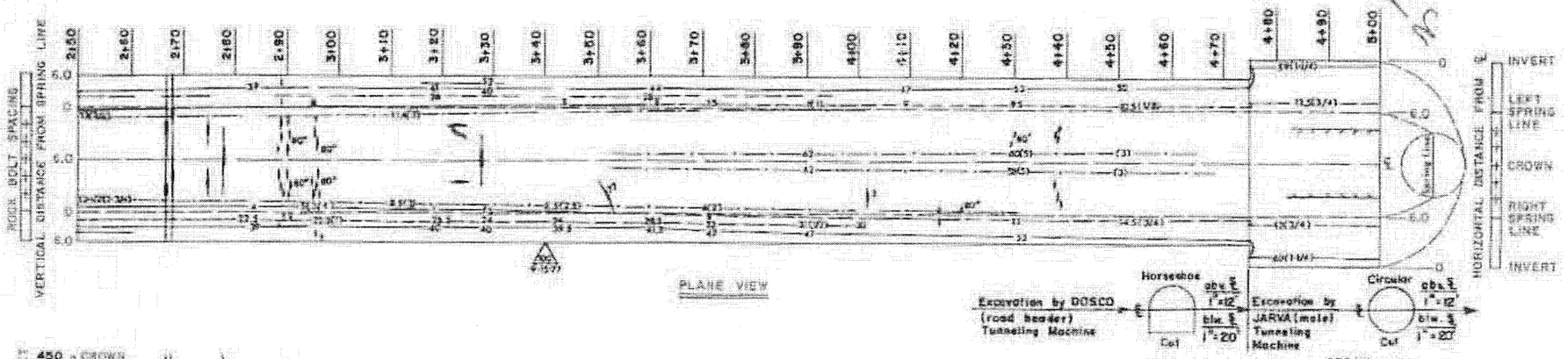
Figure 2.5-47 (Sheet 1 of 26)



SYMBOLS

- HARD, TAN, BROWN, CHERTY, IRON BED OR LAMINAE
- DISCONTINUOUS IRON BED
- HARD, LIGHT GREY, SANDY SHALE TO SILTSTONE BED
- DISCONTINUOUS IRON BED WITHIN GREY BED
- FRACTURE ZONE
- FAULT
- BEDDING PARTING
- VERTICAL JOINT
- INCLINED JOINT
- BEDDING, STRIKE AND DIP
- MOISTURE ALONG BEDDING PARTING
- SEEPAGE FROM FEATURE
- OVEREXCAVATION OR OVERBREAK ZONE, MAXIMUM AMOUNT SHOWN
- METHANE GAS, MAXIMUM PERCENT L.E.L. WITH DATE OF OCCURRENCE

*Note:
Number(s) in parentheses indicates bed thickness.
Number preceding parenthesis indicates inches above or below spring line at station of measurement.

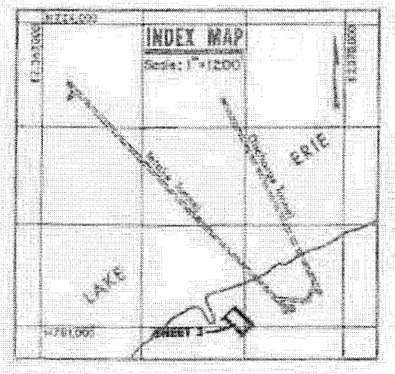


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Geologic Map of Tunnel Excavations

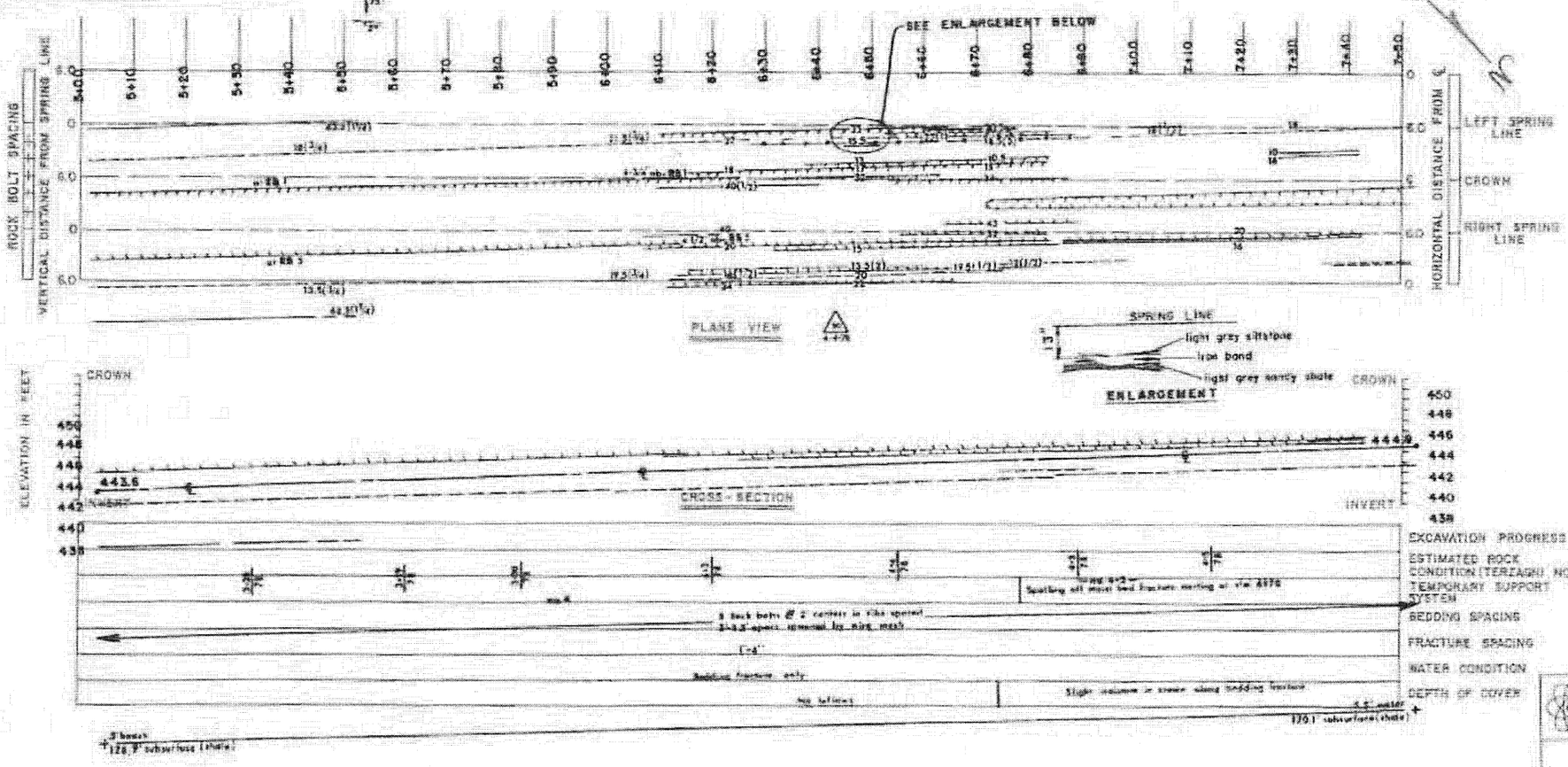
Figure 2.5-47 (Sheet 2 of 34)



SYMBOLS

- HARD, TAN, BROWN, CHERTY, IRON BED OR LAMINAE
- DISCONTINUOUS IRON BED
- HARD, LIGHT GREY, SANDY SHALE TO SILTSTONE BED
- DISCONTINUOUS IRON BED WITHIN GREY BED
- FRACTURE
- FAULT
- BEDDING PARTING
- VERTICAL JOINT
- INCLINED JOINT
- BEDDING, STRIKE AND DIP
- MOISTURE ALONG BEDDING PARTING
- SEEPAGE FROM FEATURE
- OVEREXCAVATION OR OVERBREAK ZONE, MAXIMUM AMOUNT SHOWN
- METHANE GAS, MAXIMUM PERCENT L.E.L. WITH DATE OF OCCURRENCE

Notes:
Number(s) in parentheses indicates bed thickness
Number preceding parenthesis indicates inches above or below spring line at station of measurement.
* Number preceding parenthesis indicates inches above or below spring line at station of measurement.

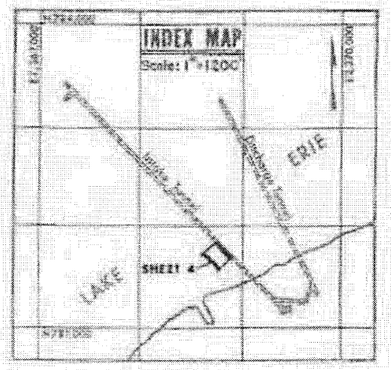


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Geologic Map of Tunnel Excavations

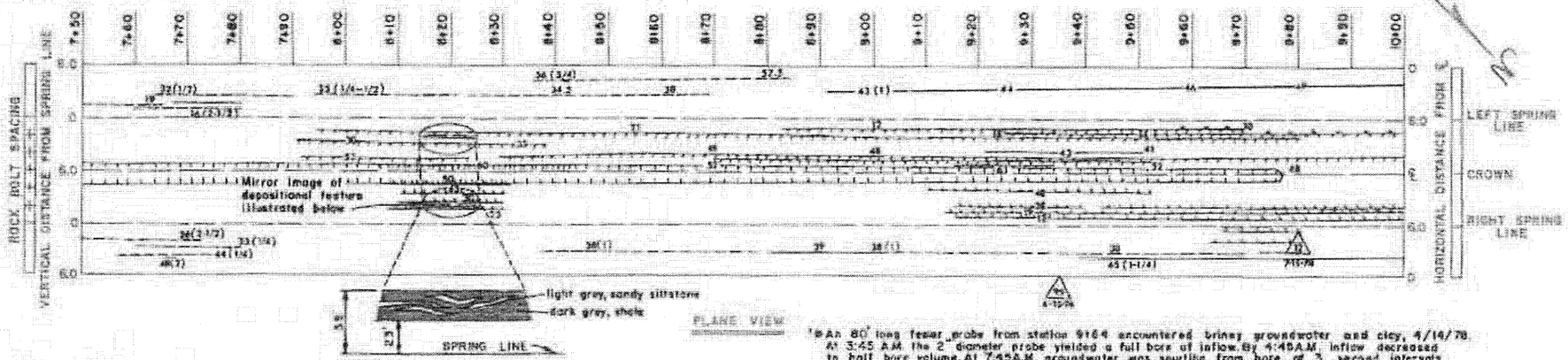
Figure 2.5-47 (Sheet 3 of 21)

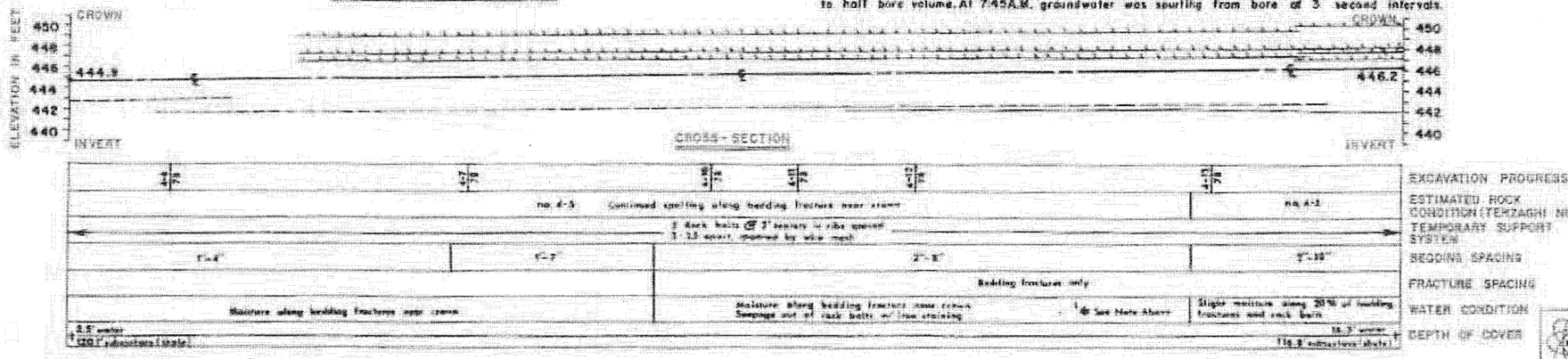


SYMBOLS

- 6 (½)" — HARD, TAN, BROWN, CHERTY, IRON BED OR LAMINAE
- 18 (9-21)" — DISCONTINUOUS IRON BED
- 17 (1)" — HARD, LIGHT GREY, SANDY SHALE TO SILTSTONE BED
- 10" (10-21)" — DISCONTINUOUS IRON BED WITHIN GREY BED
- FRACTURE
- FAULT
- BEDDING PARTING
- VERTICAL JOINT
- 73° — INCLINED JOINT
- 71 — BEDDING, STRIKE AND DIP
- MOISTURE ALONG BEDDING PARTING
- SEEPAGE FROM FEATURE
- (2') — OVEREXCAVATION OR OVERBREAK ZONE, MAXIMUM AMOUNT SHOWN
- 20 4-28-72 — METHANE GAS, MAXIMUM PERCENT L.E.L. WITH DATE OF OCCURRENCE

*Note:
Number(s) in parentheses indicates bed thickness
Number preceding parenthesis indicates inches above or below spring line at station of measurement.



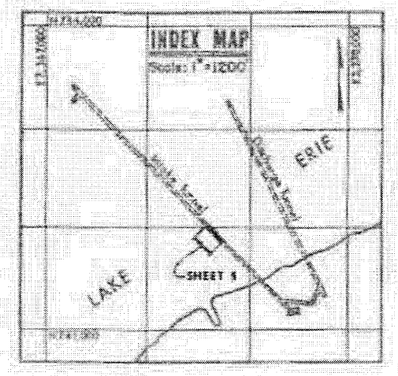


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Geologic Map of Tunnel Excavations

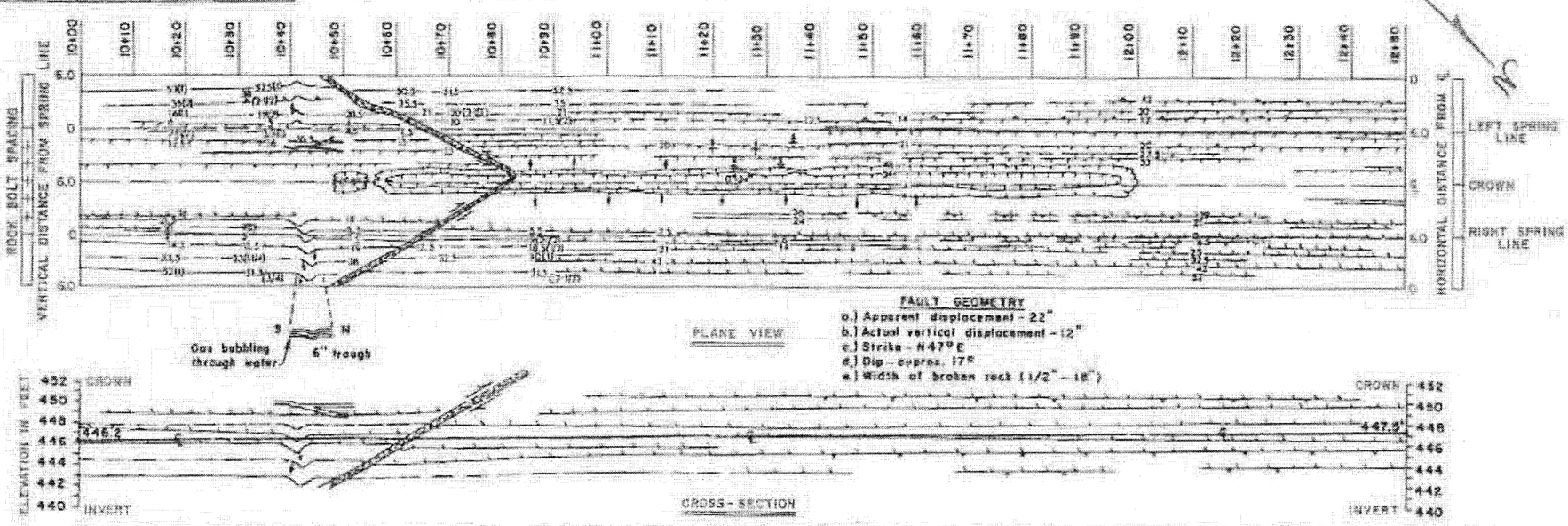
Figure 2.5-47 (Sheet 4 of 24)



SYMBOLS

- 4(½)* — HARD, TAN, BROWN, CHERTY, IRON BED OR LAMINAE
- 12(8-22)* — DISCONTINUOUS IRON BED
- 19(1)* — HARD, LIGHT GREY, SANDY SHALE TO SILTSTONE BED
- 20(½)(0-32)* — DISCONTINUOUS IRON BED WITHIN GREY BED
- FRACTURE
- FAULT (with sense of motion)
- BEDDING PARTING
- VERTICAL JOINT
- INCLINED JOINT
- BEDDING, STRIKE AND DIP
- MOISTURE ALONG BEDDING PARTING
- SEEPAGE FROM FEATURE
- OVEREXCAVATION OR OVERBREAK ZONE, MAXIMUM AMOUNT SHOWN
- METHANE GAS, MAXIMUM PERCENT L.E.L. WITH DATE OF OCCURRENCE

* Note: Number(s) in parentheses indicates bed thickness. Number preceding parenthesis indicates inches above or below spring line at station of measurement.



PLANE VIEW

FAULT GEOMETRY
a.) Apparent displacement - 22"
b.) Actual vertical displacement - 12"
c.) Strike - N47°E
d.) Dip - approx. 17°
e.) Width of broken rock (1/2" - 18")

CROSS-SECTION

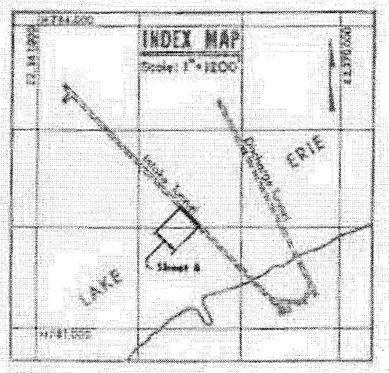
EXCAVATION PROGRESS	no. 5-6	no. 3-5	no. 2-4	no. 1-3	no. 4-5	3 rock bolts at 2' centers in ribs at 3.5' centers spanned by wire mesh
ESTIMATED ROCK CONDITION (TERZAGHI NO.)		0-24 of overbreak between rock bolt no. 2-4				
TEMPORARY SUPPORT SYSTEM	5 rock bolts at 2' centers in steel ribs at 3'-3.5' centers spanned by wire mesh		5 rock bolts at 2' centers in steel ribs at 3'-3.5' centers spanned by wire mesh		Full shielding	
BEDDING SPACING	2'-10'	1'-7'	2'-9'	Full shielding - Rock bolts in liner plates completely shield upper 3/8 of tunnel	approx. 8'-14'	8'-15'
FRACTURE SPACING	12'	Bedding fractures & 1/2 to 1" thick, highly fractured fault zone w/gouge		bedding fractures only, spaced as above		
WATER CONDITION	No inflows	Slight seep from fold	No inflows	Slight inflow from rock bolts	Slight moisture along approx. 20% of bedding fractures and rock bolts	
DEPTH OF COVER	7.9' water + 11.7' subsurface (theor.)	Water dripping from shielding		~2 inflows at approx. 3 gpm/min.		8.3' water + 10.2' subsurface (theor.)

(Rev. 13 1/83)

PERRY NUCLEAR POWER PLANT

Geologic Map of Tunnel Excavations

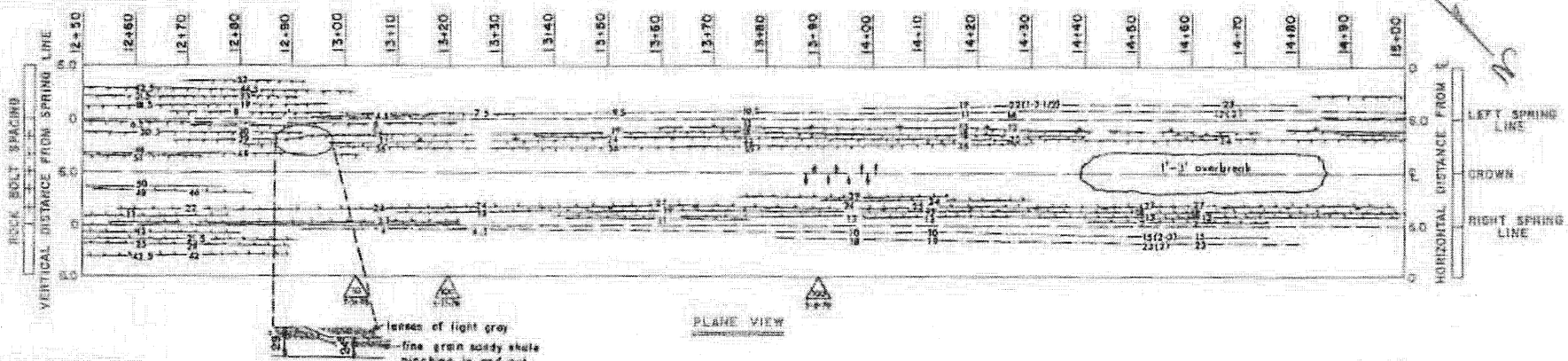
Figure 2.5-47 (Sheet 3 of 24)

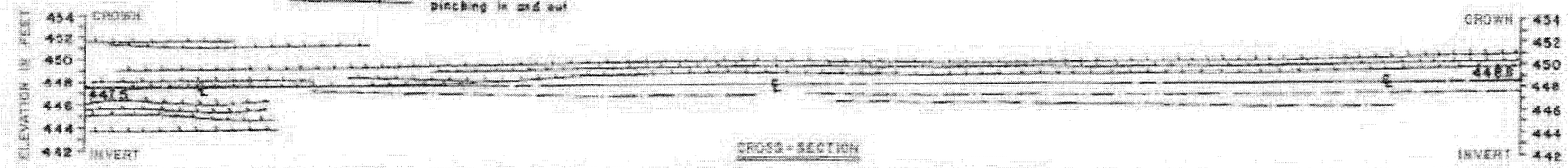


SYMBOLS

- HARD, TAN, BROWN, CHERTY, IRON BED OR LAMINAE
- DISCONTINUOUS IRON BED
- HARD, LIGHT GREY, SANDY SHALE TO SILTSTONE BED
- DISCONTINUOUS IRON BED WITHIN GREY BED
- FRACTURE
- FAULT
- BEDDING PARTING
- VERTICAL JOINT
- INCLINED JOINT
- BEDDING, STRIKE AND DIP
- MOISTURE ALONG BEDDING PARTING
- SEEPAGE FROM FEATURE
- OVEREXCAVATION OR OVERBREAK ZONE, MAXIMUM AMOUNT SHOWN
- METHANE GAS, MAXIMUM PERCENT L.E.L. WITH DATE OF OCCURRENCE

*Notes:
Number(s) in parentheses indicates bed thickness.
Number preceding parenthesis indicates inches above or below spring line at station of measurement.



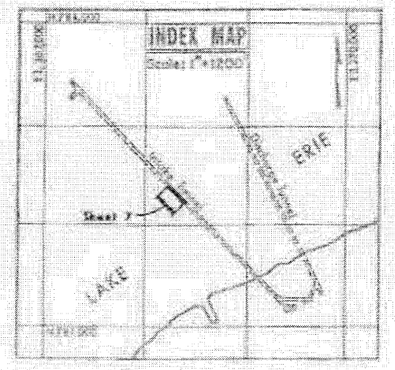


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Geologic Map of Tunnel Excavations

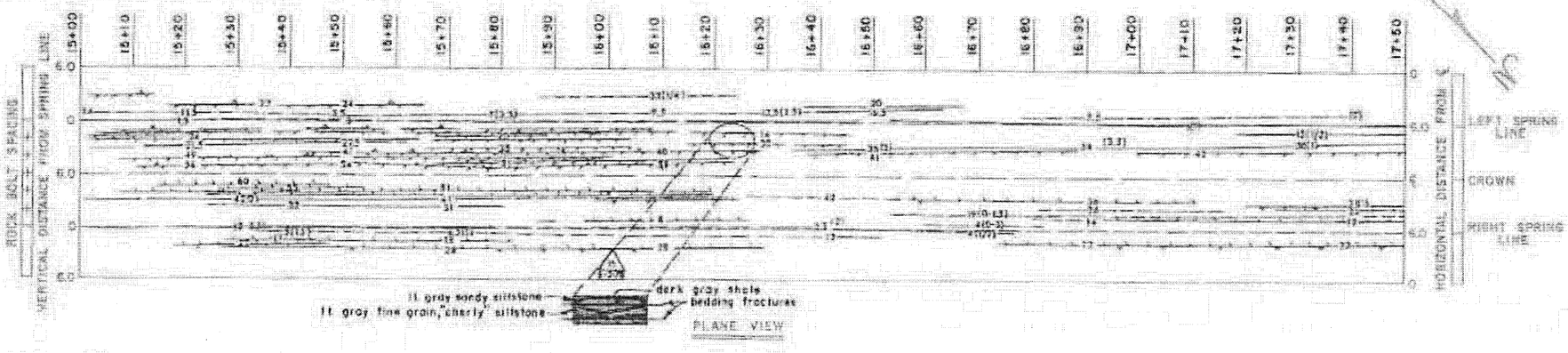
Figure 2.5-47 (Sheet 6 of 24)

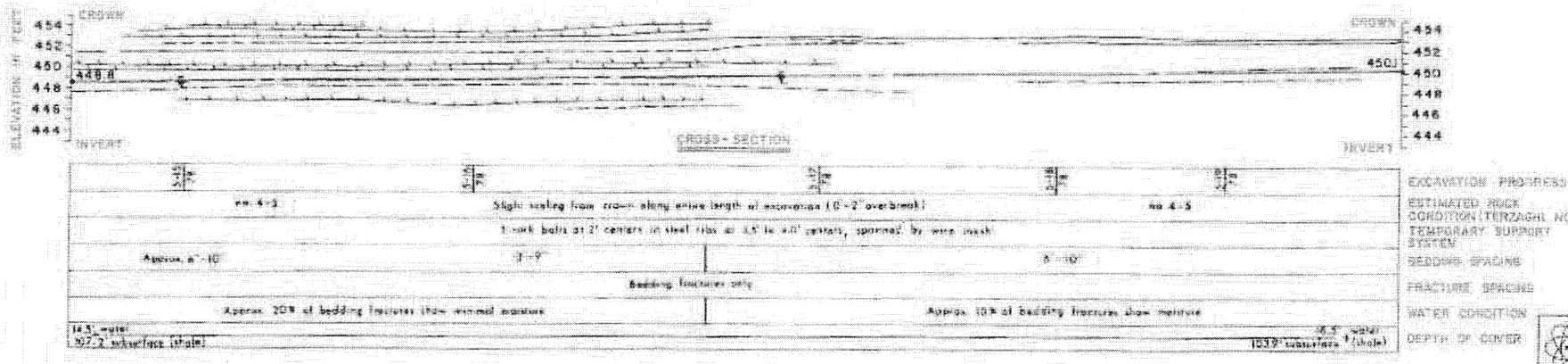


SYMBOLS

- HARD, TAN, BROWN, CHERTY, IRON BED OR LAMINAE
- DISCONTINUOUS IRON BED
- HARD, LIGHT GREY, SANDY SHALE TO SILTSTONE BED
- DISCONTINUOUS IRON BED WITHIN GREY BED
- FRACTURE
- FAULT
- BEDDING PARTING
- VERTICAL JOINT
- INCLINED JOINT
- BEDDING, STRIKE AND DIP
- MOISTURE ALONG BEDDING PARTING
- SEEPAGE FROM FEATURE
- OVEREXCAVATION OR OVERBREAK ZONE, MAXIMUM AMOUNT SHOWN
- METHANE GAS, MAXIMUM PERCENT L.E.L. WITH DATE OF OCCURRENCE

* Note:
Number(s) in parentheses indicates bed thickness.
Number preceding parenthesis indicates inches above or below spring line at station of measurement.



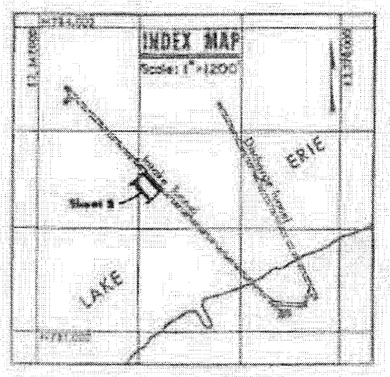


(Rev. 12 1/02)

PERRY NUCLEAR POWER PLANT

Geologic Map of Tunnel Excavations

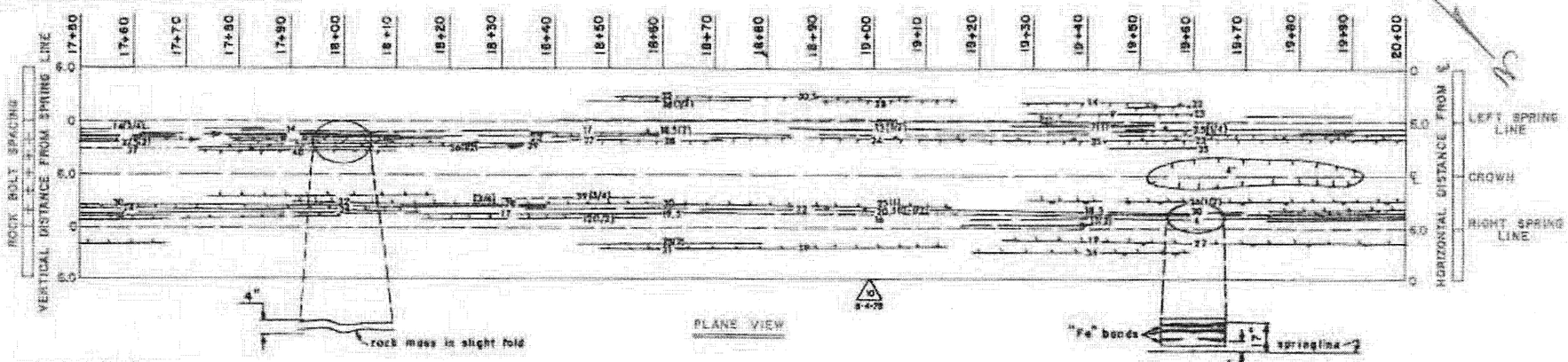
Figure 2.5-47 (Sheet 7 of 24)

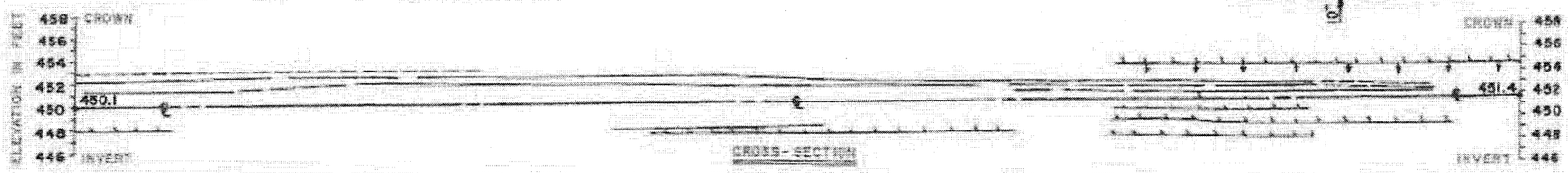


SYMBOLS

- HARD, TAN, BROWN, CHERTY, IRON BED OR LAMINAE
- DISCONTINUOUS IRON BED
- HARD, LIGHT GREY, SANDY SHALE TO SILTSTONE BED
- DISCONTINUOUS IRON BED WITHIN GREY BED
- FRACTURE
- FAULT
- BEDDING PARTING
- VERTICAL JOINT
- INCLINED JOINT
- BEDDING, STRIKE AND DIP
- MOISTURE ALONG BEDDING PARTING
- SEEPAGE FROM FEATURE
- OVEREXCAVATION OR OVERBREAK ZONE, MAXIMUM AMOUNT SHOWN
- METHANE GAS, MAXIMUM PERCENT L.E.L. WITH DATE OF OCCURRENCE

* Note:
Number(s) in parentheses indicates bed thickness. Number preceding parenthesis indicates inches above or below spring line at station of measurement.





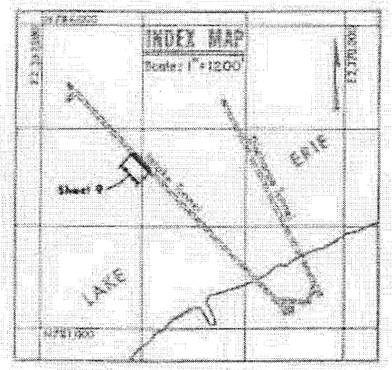
EXCAVATION PROGRESS				
ESTIMATED ROCK CONDITION (TERZAGHI NO.)	no. 4	Slight scaling along crown for entire length (between rock bolt 2 & 4)		Slight scaling from roof (0"–4") no. 4
TEMPORARY SUPPORT SYSTEM	5 rock bolts at 3.0' centers in steel ribs at 3.5' to 4.0' centers, spanned by wire mesh			Same, ribs at 4.0' centers
BEDDING SPACING	Approx. 4"	Approx. 4" to 10"		9" to 9'
FRACTURE SPACING	Bedding fractures only			
WATER CONDITION	Traces of moisture along a couple bedding fractures			Slight moisture on approx. 60ft of the excavation
DEPTH OF COVER	16.5 ± water 101.6 ± subsurface (shale)			12.8 water 101.3 subsurface (shale) ±

(Rev. 12 3/03)

PERRY NUCLEAR POWER PLANT

Geologic Map of Tunnel Excavations

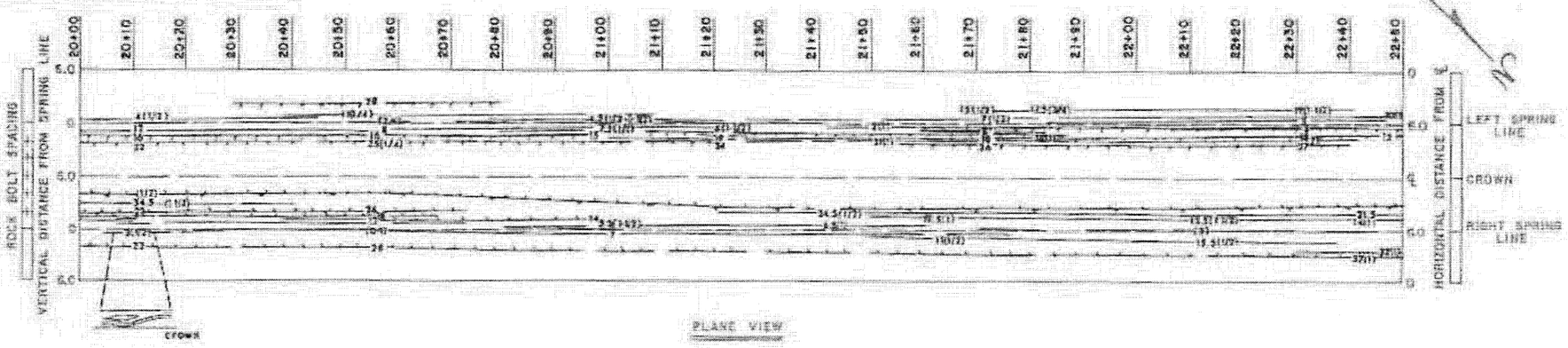
Figure 2.5-47 (Sheet 8 of 24)



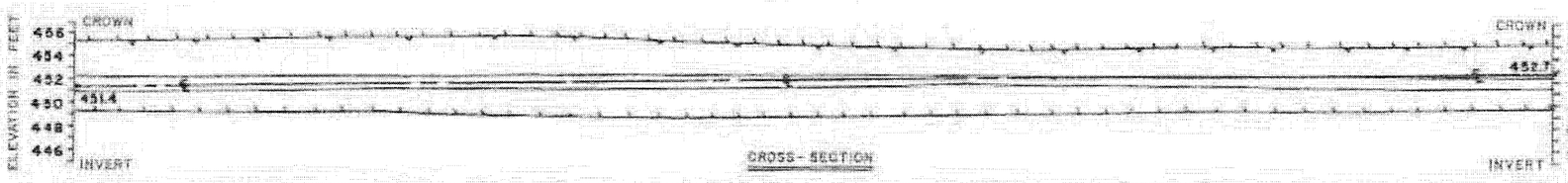
SYMBOLS

- 4 (½)" — HARD, TAN, BROWN, CHERTY, IRON BED OR LAMINAE
- 12 (0-2)* — DISCONTINUOUS IRON BED
- 12 (1)* — HARD, LIGHT GREY, SANDY SHALE TO SILTSTONE BED
- 10 (0.5-2)* — DISCONTINUOUS IRON BED WITHIN GREY BED
- FRACTURE
- FAULT
- BEDDING PARTING
- VERTICAL JOINT
- INCLINED JOINT
- BEDDING, STRIKE AND DIP
- MOISTURE ALONG BEDDING PARTING
- SEEPAGE FROM FEATURE
- OVEREXCAVATION OR OVERBREAK ZONE, MAXIMUM AMOUNT SHOWN
- METHANE GAS, MAXIMUM PERCENT L.E.L. WITH DATE OF OCCURRENCE

*Note:
Number(s) in parentheses indicates bed thickness.
Number preceding parenthesis indicates inches above or below spring line at station of measurement.



PLANE VIEW



CROSS-SECTION

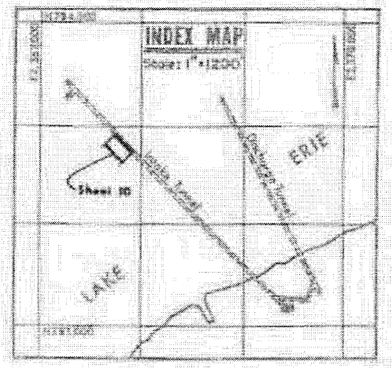
EXCAVATION PROGRESS				
ESTIMATED ROCK CONDITION (TERZAGHI NO.)				
TEMPORARY SUPPORT SYSTEM				
BEDDING SPACING				
FRACTURE SPACING				
WATER CONDITION				
DEPTH OF COVER				

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Geologic Map of Tunnel Excavations

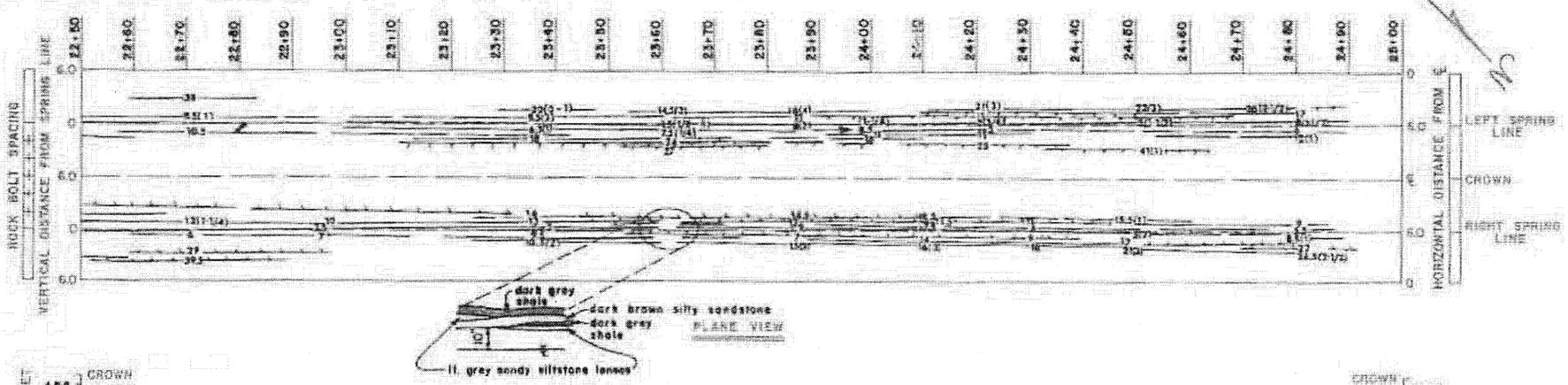
Figure 2.5-47 (Sheet 9 of 24)

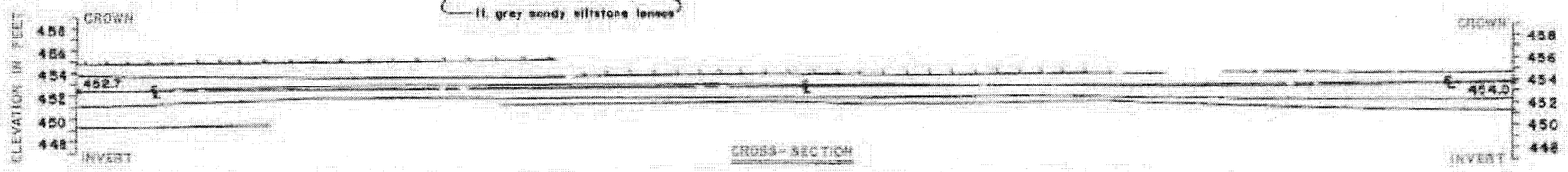


SYMBOLS

- HARD, TAN, BROWN, CHERTY, IRON BED OR LAMINAE
- DISCONTINUOUS IRON BED
- HARD, LIGHT GREY, SANDY SHALE TO SILTSTONE BED
- DISCONTINUOUS IRON BED WITHIN GREY BED
- FRACTURE
- FAULT
- BEDDING PARTING
- VERTICAL JOINT
- INCLINED JOINT
- BEDDING, STRIKE AND DIP
- MOISTURE ALONG BEDDING PARTING
- SEEPAGE FROM FEATURE
- OVEREXCAVATION OR OVERBREAK ZONE, MAXIMUM AMOUNT SHOWN
- METHANE GAS, MAXIMUM PERCENT L.E.L. WITH DATE OF OCCURRENCE

*Note:
Number(s) in parentheses indicates bed thickness.
Number preceding parenthesis indicates inches above or below spring line at station of measurement.





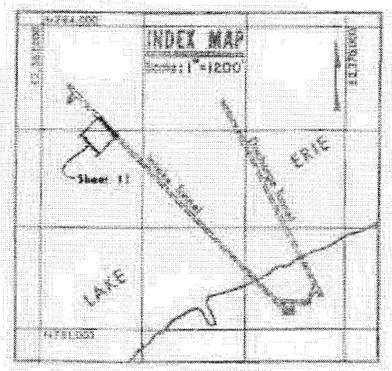
EXCAVATION PROGRESS	
ESTIMATED ROCK CONDITION (YERZAGHI NO.)	
TEMPORARY SUPPORT SYSTEM	
BEDDING SPACING	
FRACTURE SPACING	
WATER CONDITION	Moist bedding fracture, above springline along east wall / No seepage
DEPTH OF COVER	7.5' water / 10'± bedrock (shale) / 8.5' water / 94.0' bedrock (shale) +

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Geologic Map of Tunnel Excavations

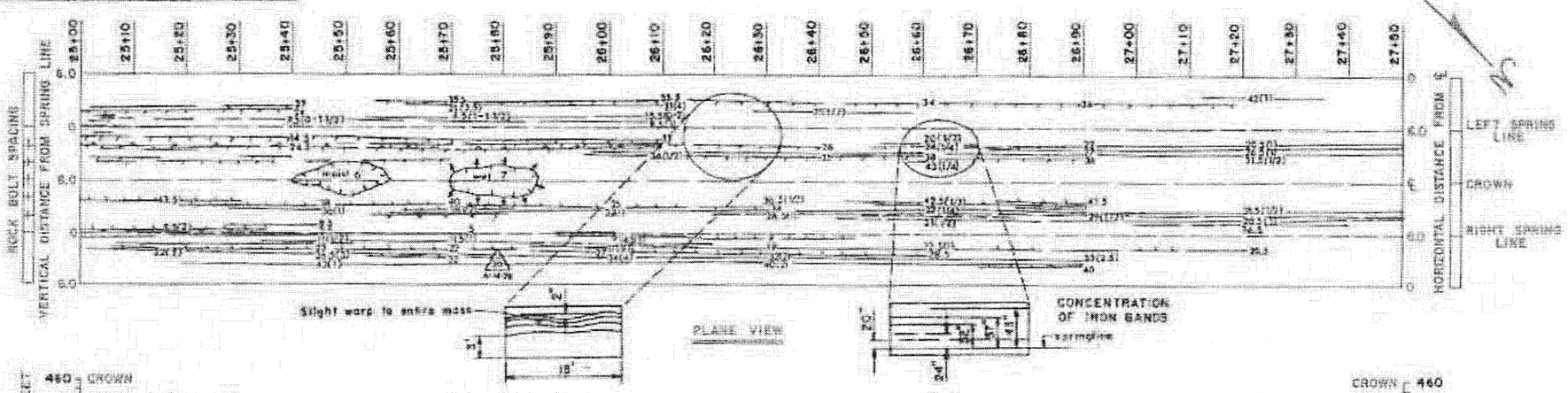
Figure 2.5-47 (Sheet 10 of 24)



SYMBOLS

- HARD, TAN, BROWN, CHERTY, IRON BED OR LAMINAE
- DISCONTINUOUS IRON BED
- HARD, LIGHT GREY, SANDY SHALE TO SILTSTONE BED
- DISCONTINUOUS IRON BED WITHIN GREY BED
- FRACTURE
- FAULT
- BEDDING PARTING
- VERTICAL JOINT
- INCLINED JOINT
- BEDDING, STRIKE AND DIP
- MOISTURE ALONG BEDDING PARTING
- SEEPAGE FROM FEATURE
- OVEREXCAVATION OR OVERBREAK ZONE, MAXIMUM AMOUNT SHOWN
- METHANE GAS, MAXIMUM PERCENT L.E.L. WITH DATE OF OCCURRENCE

*Note:
Number(s) in parenthesis indicates bed thickness.
Number preceding parenthesis indicates inches above or below spring line at station of measurement.

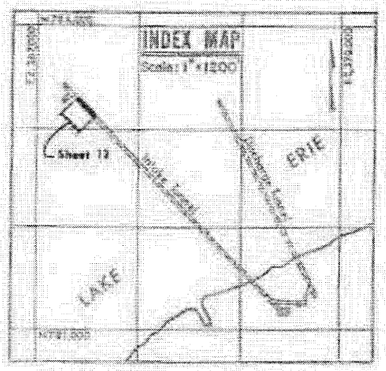


(Rev. 12 1/83)

PERRY NUCLEAR POWER PLANT

Geologic Map of Tunnel Excavations

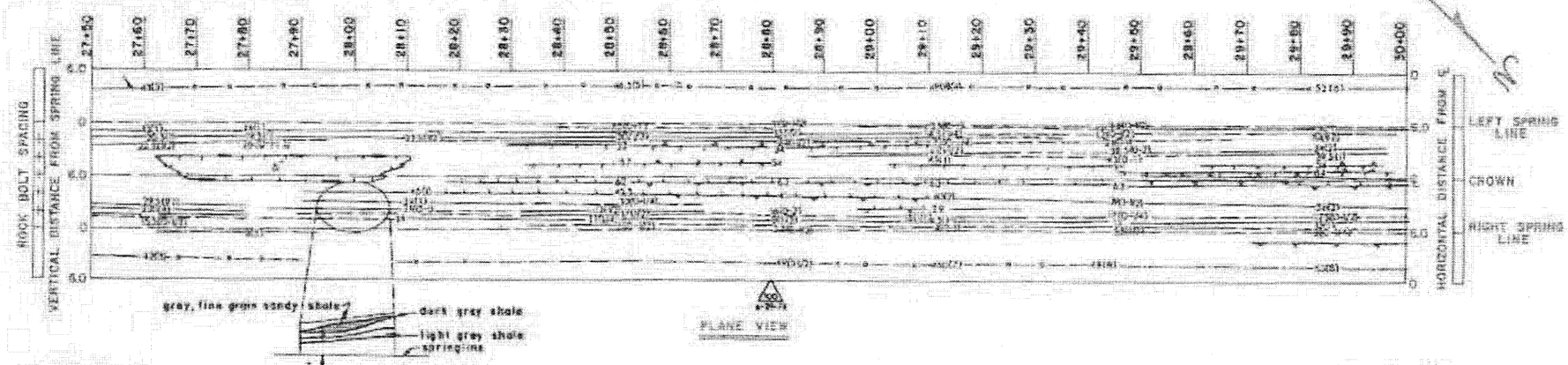
Figure 2.5-47 (Sheet 11 of 24)

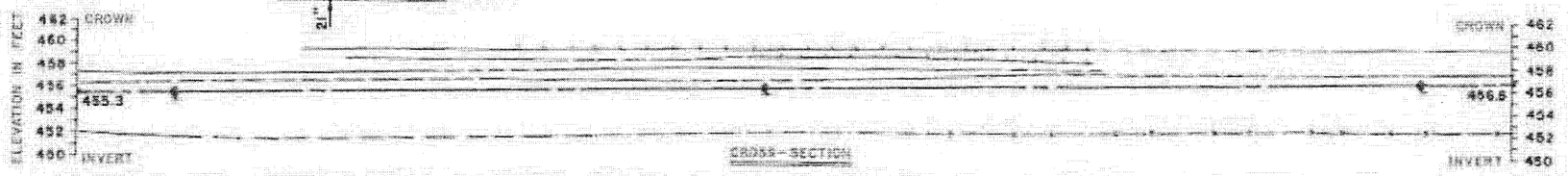


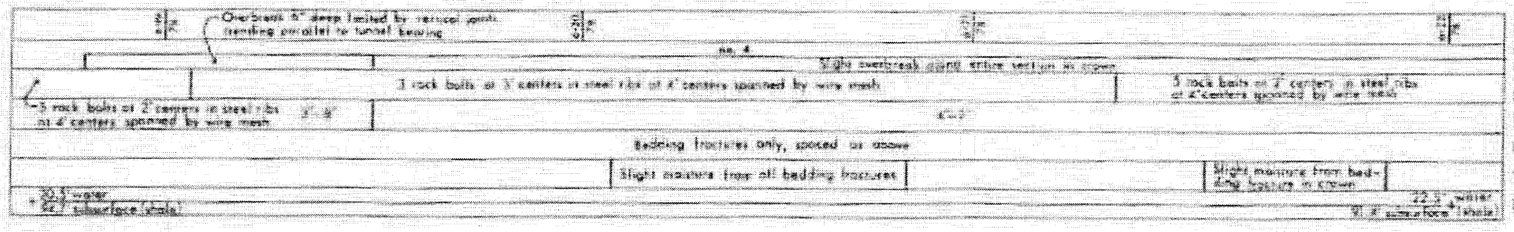
SYMBOLS

- HARD, TAN, BROWN, CHERTY, IRON BED OR LAMINAE
- DISCONTINUOUS IRON BED
- HARD, LIGHT GREY, SANDY SHALE TO SILTSTONE BED
- DISCONTINUOUS IRON BED WITHIN GREY BED
- FRACTURE
- FAULT
- BEDDING PARTING
- VERTICAL JOINT
- INCLINED JOINT
- BEDDING, STRIKE AND DIP
- MOISTURE ALONG BEDDING PARTING
- SEEPAGE FROM FEATURE
- OVEREXCAVATION OR OVERBREAK ZONE, MAXIMUM AMOUNT SHOWN
- METHANE GAS, MAXIMUM PERCENT L.E.L. WITH DATE OF OCCURRENCE

*Note:
Number(s) in parentheses indicate bed thickness. Number preceding parenthesis indicates inches above or below spring line at station of measurement.





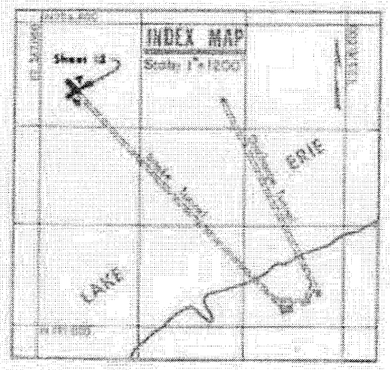


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Geologic Map of Tunnel Excavations

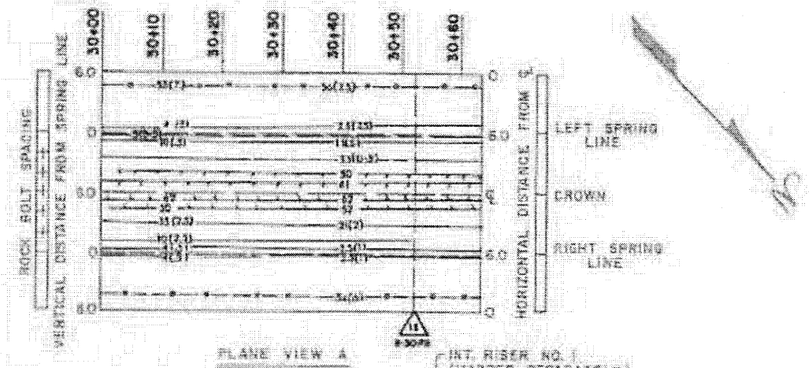
Figure 2.5-47 (Sheet 12 of 24)

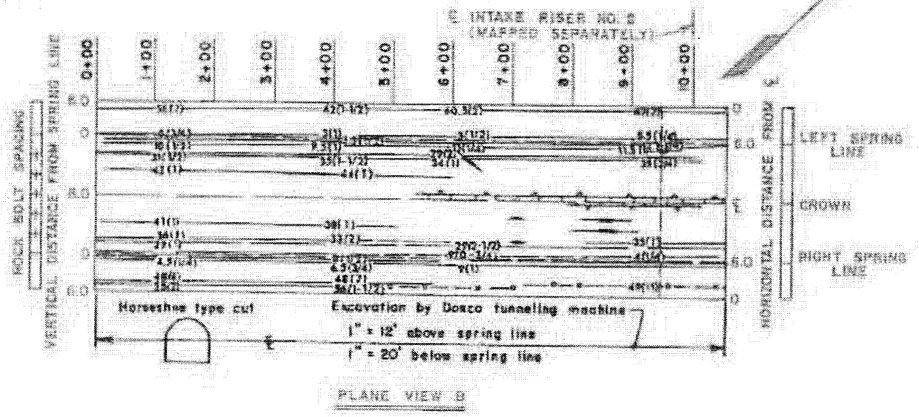


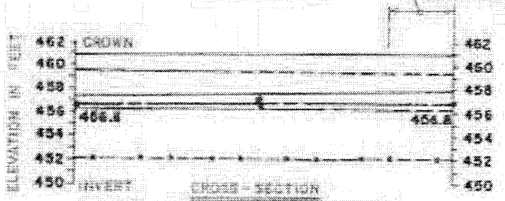
SYMBOLS

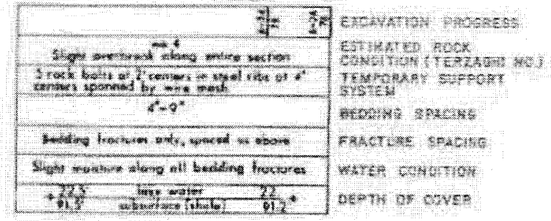
- 4(½)* HARD, TAN, BROWN, CHERTY, IRON BED OR LAMINAE
- 12(8-2)* DISCONTINUOUS IRON BED
- 12(1)* HARD, LIGHT GREY, SANDY SHALE TO SILTSTONE BED
- 3(2)*;2* DISCONTINUOUS IRON BED WITHIN GREY BED
- FRACTURE
- FAULT
- BEDDING PARTING
- VERTICAL JOINT
- INCLINED JOINT
- BEDDING, STRIKE AND DIP
- MOISTURE ALONG BEDDING PARTING
- SEEPAGE FROM FEATURE
- OVEREXCAVATION OR OVERBREAK ZONE, MAXIMUM AMOUNT SHOWN
- METHANE GAS, MAXIMUM PERCENT L.E.L. WITH DATE OF OCCURRENCE

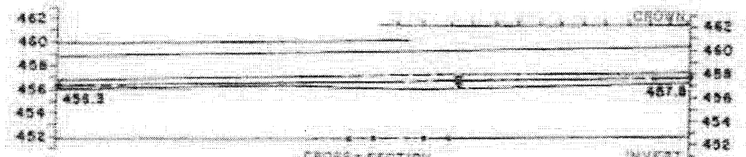
* Note:
Number(s) in parentheses indicates bed thickness.
Number preceding parenthesis indicates inches above or below spring line at station of measurement.

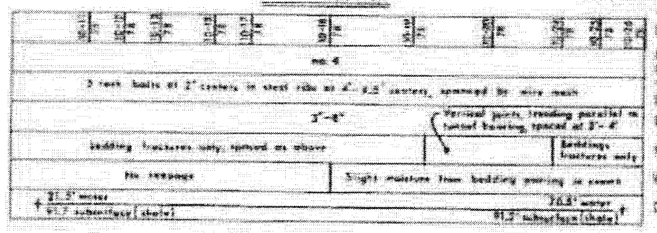










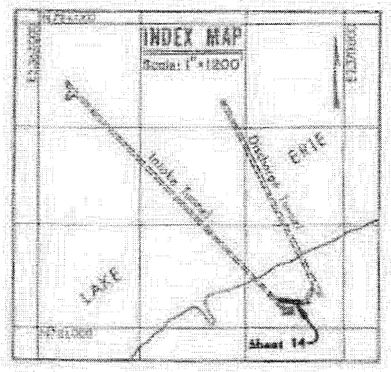


(Rev. 12 1/83)

PERRY NUCLEAR POWER PLANT

Geologic Map of Tunnel Excavations

Figure 2.5-47 (Sheet 13 of 24)

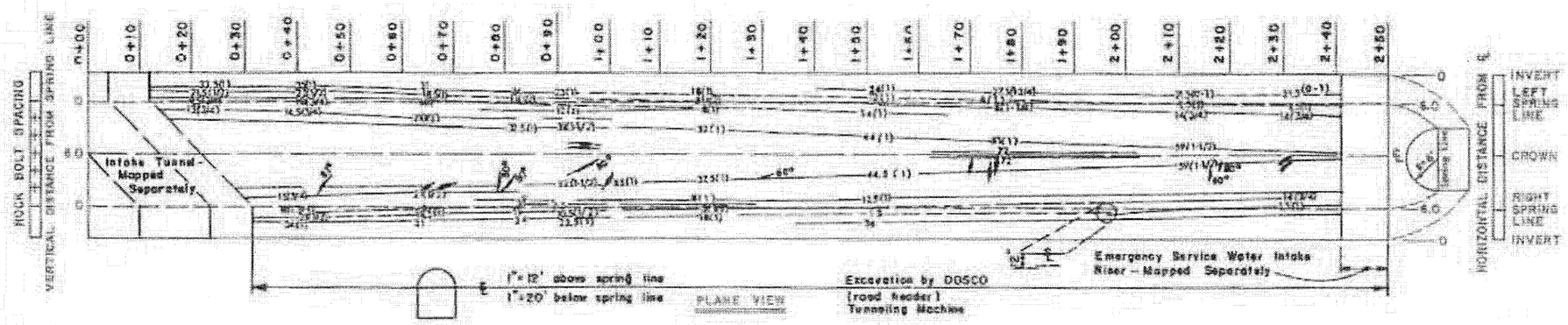


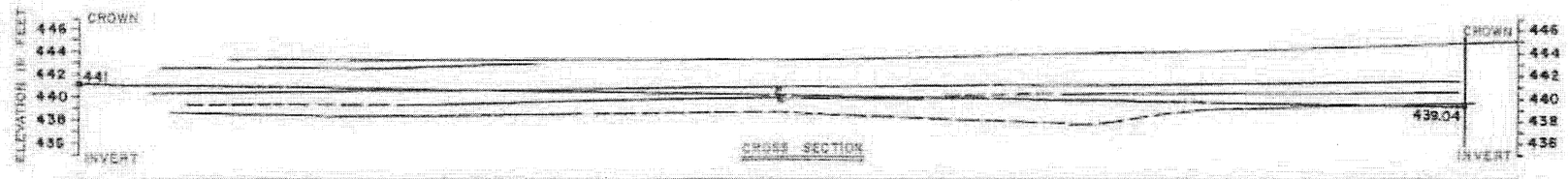
SYMBOLS

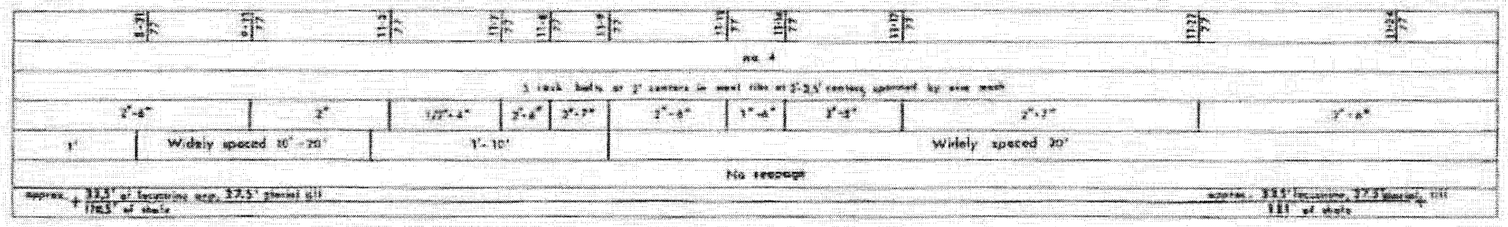
- 4 (½)" — HARD, TAN, BROWN, CHERTY, IRON BED OR LAMINAE
- 12 (0-2)" — DISCONTINUOUS IRON BED
- 32 (1)" — HARD, LIGHT GREY, SANDY SHALE TO SILTSTONE BED
- 15 (7½-3)" — DISCONTINUOUS IRON BED WITHIN GREY BED
- FRACTURE
- FAULT
- BEDDING PARTING
- VERTICAL JOINT
- INCLINED JOINT
- BEDDING, STRIKE AND DIP
- MOISTURE ALONG BEDDING PARTING
- SEEPAGE FROM FEATURE
- OVEREXCAVATION OR OVERBREAK ZONE, MAXIMUM AMOUNT SHOWN
- METHANE GAS, MAXIMUM PERCENT L.E.L. WITH DATE OF OCCURRENCE

* Note: Numberial in parenthesis indicates bed thickness. Number preceding parenthesis indicates inches above or below spring line at station of measurement.

N







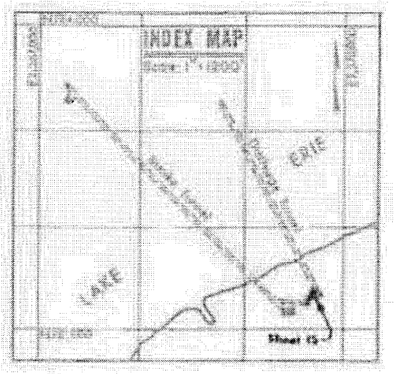
EXCAVATION PROGRESS
ESTIMATED ROCK CONDITION (TERZAGHI NO.)
TEMPORARY SUPPORT SYSTEM
BEDDING SPACING
FRACTURE SPACING
WATER CONDITION
DEPTH OF COVER

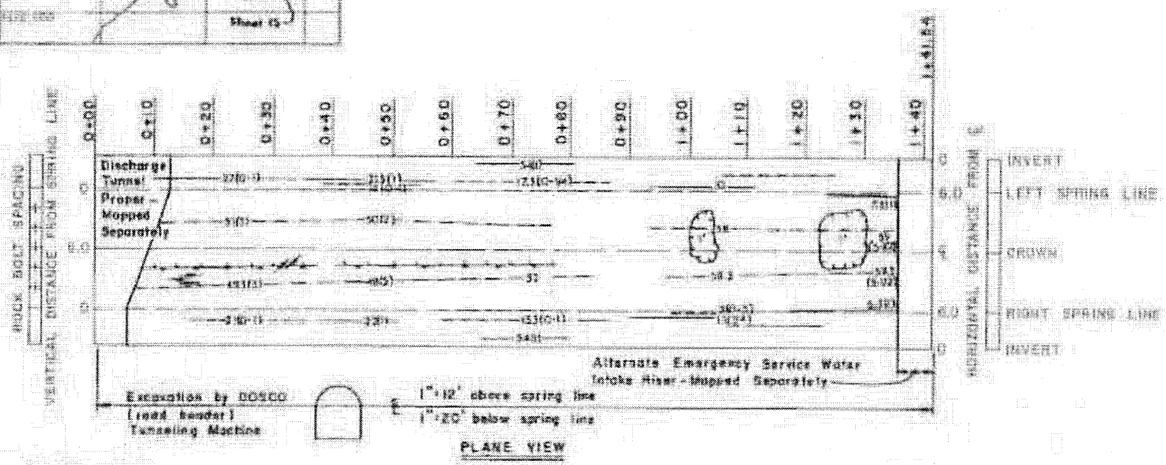
(Rev. 12 1/83)

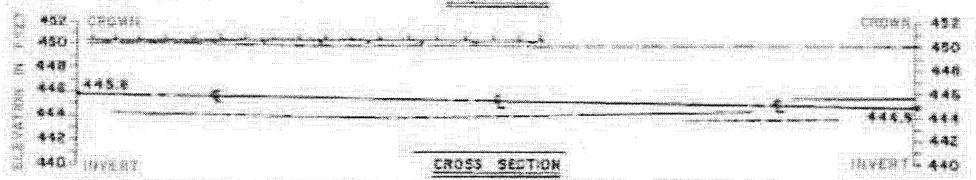
PERRY NUCLEAR POWER PLANT

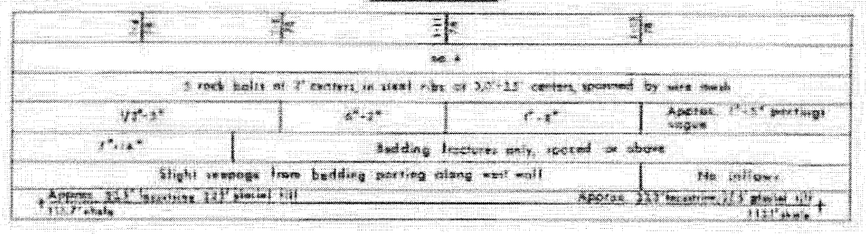
Geologic Map of Tunnel Excavations

Figure 2.5-47 (Sheet 16 of 24)









EXCAVATION PROGRESS

ESTIMATED ROCK CONDITION (TERZAGHI NO.)

TEMPORARY SUPPORT SYSTEM

BEDDING SPACING

FRACTURE SPACING

WATER CONDITION

DEPTH OF COVER

SYMBOLS

- HARD, TAN, BROWN, GREATY, IRON RED OR LAMINAE
- DISCONTINUOUS IRON RED
- HARD, LIGHT GREY, SANDY SHALE TO SILTSTONE BED
- DISCONTINUOUS IRON RED WITHIN GREY BED
- FRACTURE
- FAULT
- BEDDING PARTING
- VERTICAL JOINT
- INCLINED JOINT
- BEDDING, STRIKE AND DIP
- MOISTURE ALONG BEDDING PARTING
- SEEPAGE FROM FEATURE
- OVEREXCAVATION OR OVERBREAK ZONE, MAXIMUM AMOUNT SHOWN

*Note:
Number(s) in parentheses indicates bed thickness. Number preceding parenthesis indicates inches above or below spring line at station of measurement.

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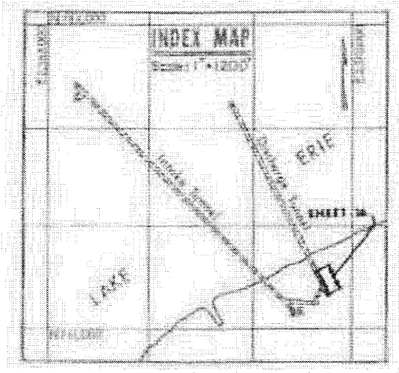
PERRY NUCLEAR POWER PLANT

Geologic Map of Tunnel Excavations

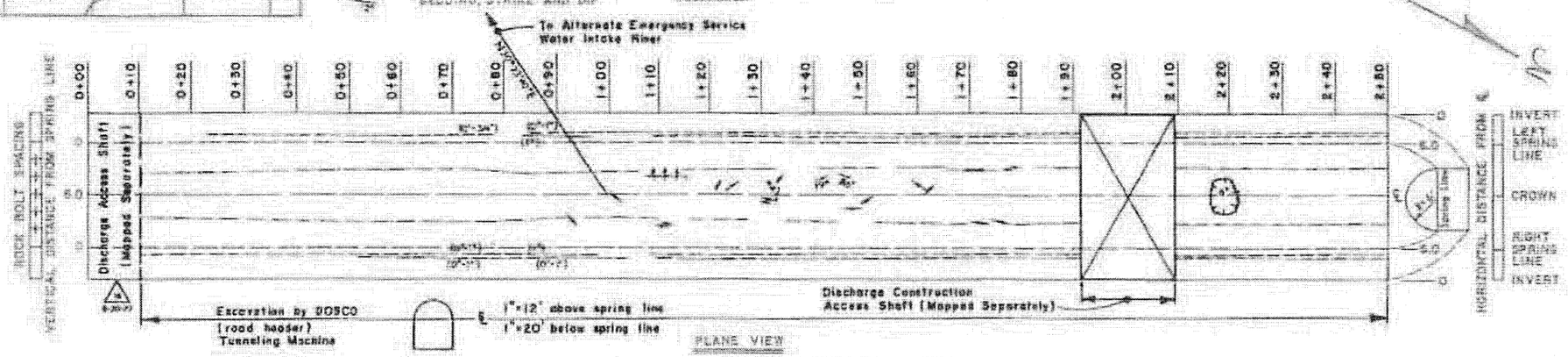
Figure 2.5-47 (Sheet 15 of 24)

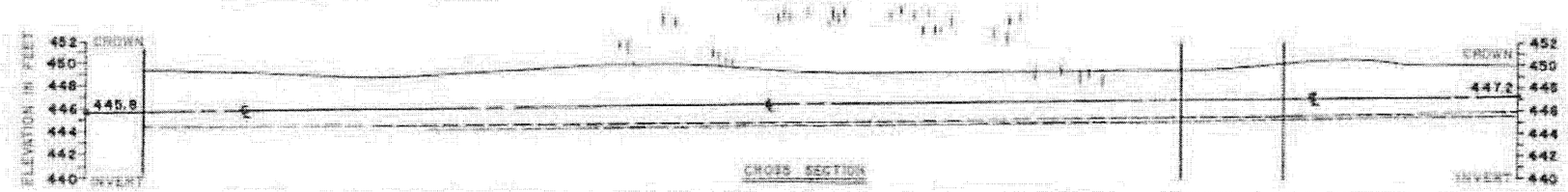


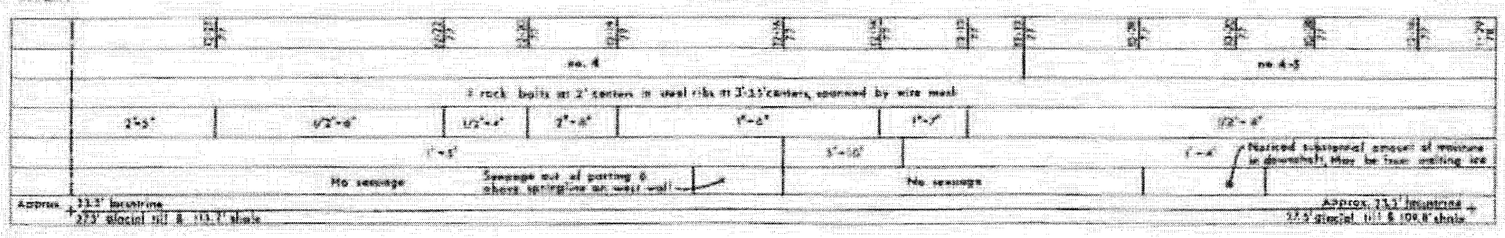
SYMBOLS

- HARD, TAN, BROWN, CHERTY, IRON BED OR LAMINAE
- DISCONTINUOUS IRON BED
- HARD LIGHT GREY SANDY SHALE TO SILTSTONE BED
- DISCONTINUOUS IRON BED WITHIN GREY BED
- FRACTURE
- FAULT
- BEDDING PARTING
- VERTICAL JOINT
- INCLINED JOINT
- BEDDING, STRIKE AND DIP
- MOISTURE ALONG BEDDING PARTING
- SEEPAGE FROM FEATURE
- OVEREXCAVATION OR OVERBREAK ZONE, MAXIMUM AMOUNT SHOWN
- METHANE GAS, MAXIMUM PERCENT L.E.L. WITH DATE OF OCCURRENCE

* Note:
Number(s) in parenthesis indicates bed thickness.
Number preceding parenthesis indicates inches above or below spring line at station of measurement.







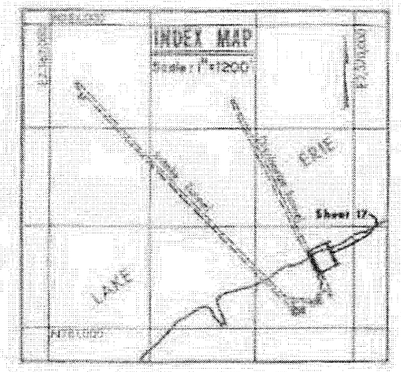
EXCAVATION PROGRESS
ESTIMATED ROCK CONDITION (TERZAGHI NO.)
TEMPORARY SUPPORT SYSTEM
BEDDING SPACING
FRACTURE SPACING
WATER CONDITION
DEPTH OF COVER

(Rev. 12 1/83)

PERRY NUCLEAR POWER PLANT

Geologic Map of Tunnel Excavations

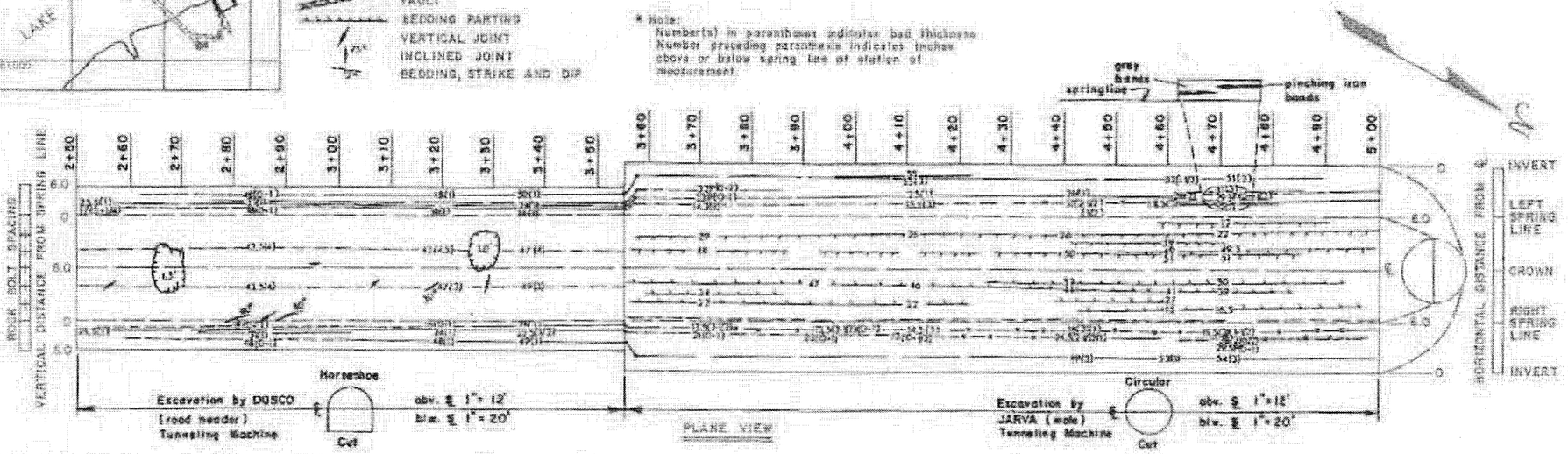
Figure 2.5-47 (Sheet 16 of 24)

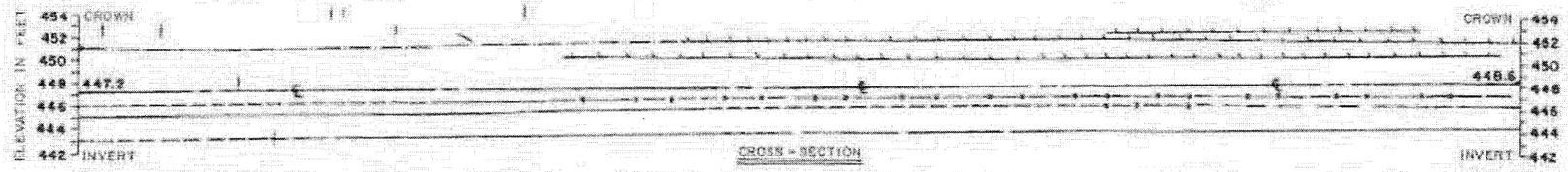


SYMBOLS

- HARD, TAN, BROWN, CHERTY, IRON BED OR LAMINAE
- DISCONTINUOUS IRON BED
- HARD, LIGHT GREY, SANDY SHALE TO SILTSTONE BED
- DISCONTINUOUS IRON BED WITHIN GREY BED
- FRACTURE
- FAULT
- BEDDING PARTING
- VERTICAL JOINT
- INCLINED JOINT
- BEDDING, STRIKE AND DIP
- MOISTURE ALONG BEDDING PARTING
- SEEPAGE FROM FEATURE
- OVEREXCAVATION OR OVERBREAK ZONE, MAXIMUM AMOUNT SHOWN

* Note:
Number(s) in parenthesis indicates bed thickness
Number preceding parenthesis indicates inches above or below spring line of station of measurement





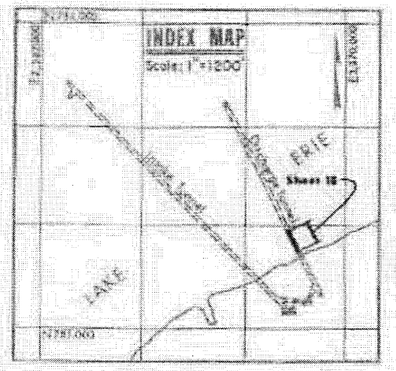
			no 4			EXCAVATION PROGRESS
5 rock bolts on 5' centers in steel ribs at 20'-23' centers, spanned by wire mesh						ESTIMATED ROCK CONDITION (TERZAGHI NO.) TEMPORARY SUPPORT SYSTEM
1'-9"	1'-3"	1'-9"	5'-9"	4'-9"	5'-11"	BEDDING SPACING
Approx. 5'-10'	Approx. 8'	Approx. 11'	Jointing less apparent in smooth circular bore excavation	Bedding fractures only, spaced as above		FRACTURE SPACING
No inflows						WATER CONDITION
+ Approx. 24' lacustrine & 34' glacial till 114.5' shale					Approx. 7' of bedrock + 172' of shale	DEPTH OF COVER

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Geologic Map of Tunnel Excavations

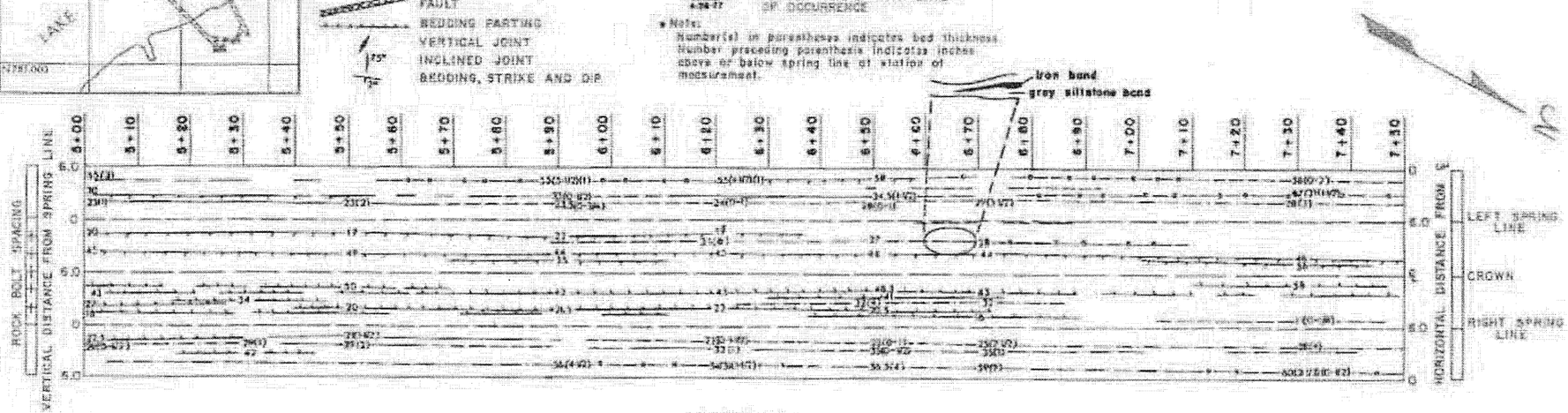
Figure 2.5-47 (Sheet 17 of 24)



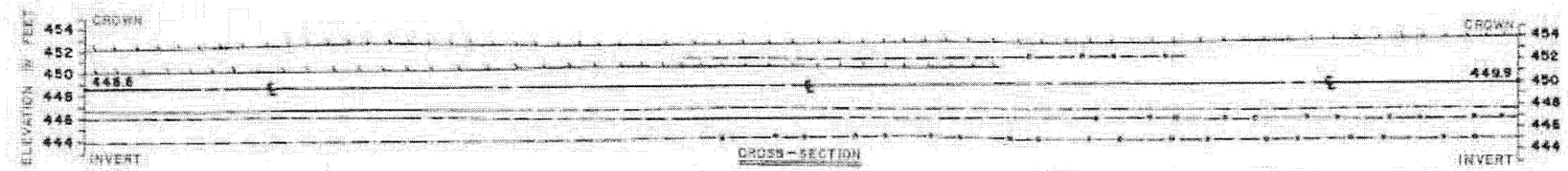
SYMBOLS

- HARD, TAN, BROWN, CHERTY, IRON BED OR LAMINAE
- DISCONTINUOUS IRON BED
- HARD, LIGHT GREY, SANDY SHALE TO SILTSTONE BED
- DISCONTINUOUS IRON BED WITHIN GREY BED
- FRACTURE
- FAULT
- BEDDING PARTING
- VERTICAL JOINT
- INCLINED JOINT
- BEDDING, STRIKE AND DIP
- MOISTURE ALONG BEDDING PARTING
- SEEPAGE FROM FEATURE
- OVEREXCAVATION OR OVERBREAK ZONE, MAXIMUM AMOUNT SHOWN
- METHANE GAS, MAXIMUM PERCENT L.E.L. WITH DATE OF OCCURRENCE

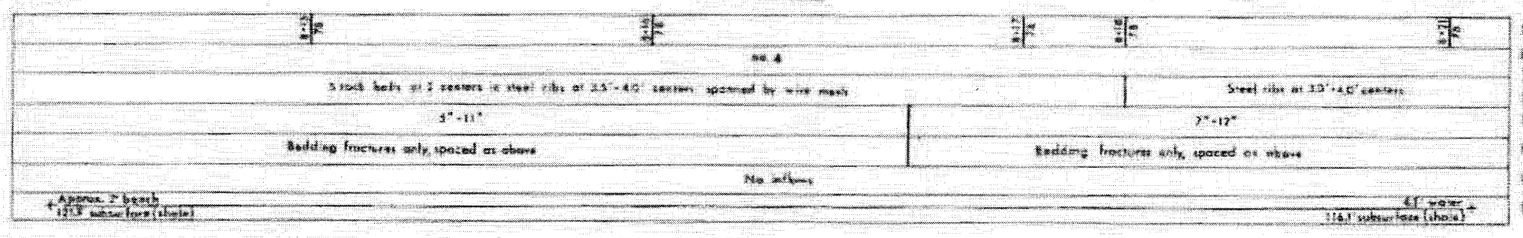
* Notes:
Number(s) in parentheses indicates bed thickness
Number preceding parenthesis indicates inches above or below spring line at station of measurement.



PLANE VIEW



CROSS-SECTION



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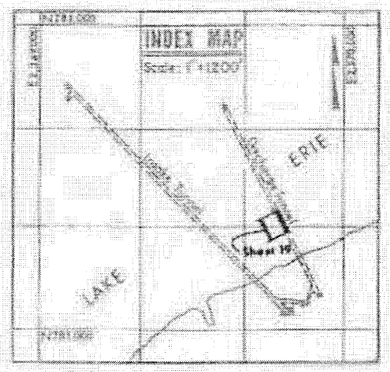
PERRY NUCLEAR POWER PLANT

Geologic Map of Tunnel Excavations

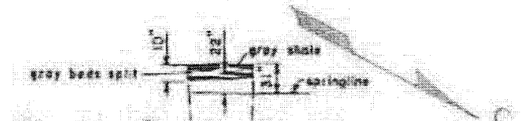
Figure 2.5-47 (Sheet 18 of 24)

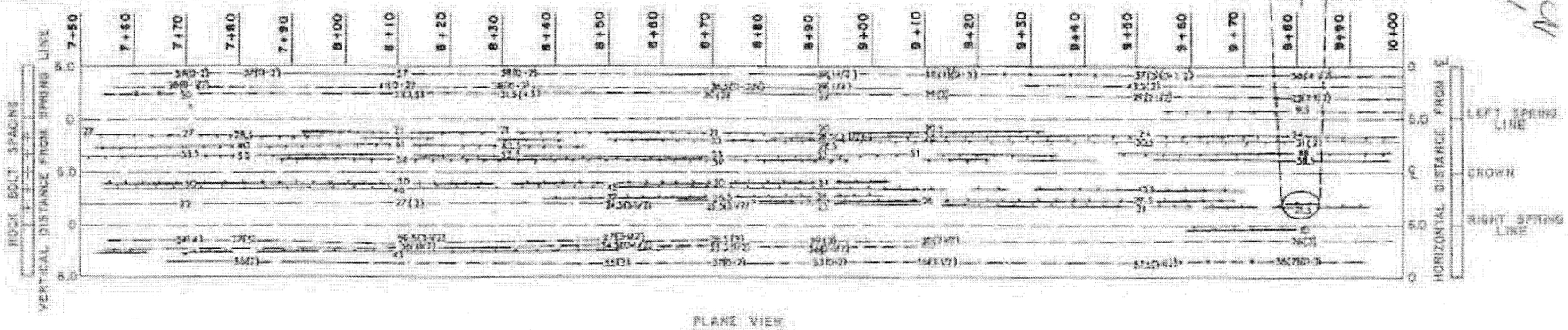


SYMBOLS

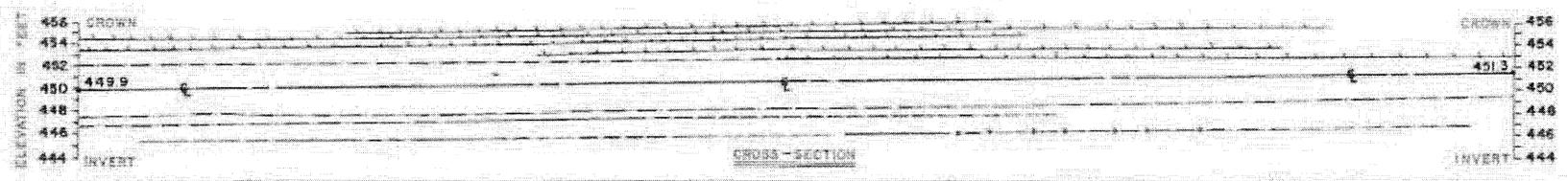
- HARD, TAN, BROWN, CHERTY, IRON BED OR LAMINAE
- DISCONTINUOUS IRON BED
- HARD, LIGHT GREY, SANDY SHALE TO SILTSTONE BED
- DISCONTINUOUS IRON BED WITHIN GREY BED
- FRACTURE
- FAULT
- BEDDING PARTING
- VERTICAL JOINT
- INCLINED JOINT
- BEDDING, STRIKE AND DIP
- MOISTURE ALONG BEDDING PARTING
- SEEPAGE FROM FEATURE
- OVEREXCAVATION OR OVERBREAK ZONE, MAXIMUM AMOUNT SHOWN
- METHANE GAS, MAXIMUM PERCENT L.E.L. WITH DATE OF OCCURRENCE

* Note:
Number(s) in parenthesis indicates bed thickness. Number preceding parenthesis indicates inches above or below spring line at station of measurement.





PLANE VIEW



CROSS-SECTION

EXCAVATION PROGRESS	3'-2" / 3'-2" / 3'-2" / 3'-2"
ESTIMATED ROCK CONDITION (TERZAGHI NO.)	no. 4
TEMPORARY SUPPORT SYSTEM	5 rock bolts at 3' centers in steel ribs at 3'-4" centers, spanned by wire mesh
BEDDING SPACING	8'-12"
FRACTURE SPACING	Bedding fractures only, covered as above
WATER CONDITION	No inflows
DEPTH OF COVER	+ 43'Sea water (16.1'subsurface (shale)) / 72' Lake water (111.7' subsurface (shale)) +

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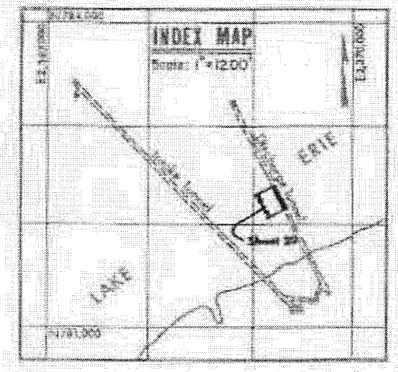
PERRY NUCLEAR POWER PLANT

Geologic Map of Tunnel Excavations

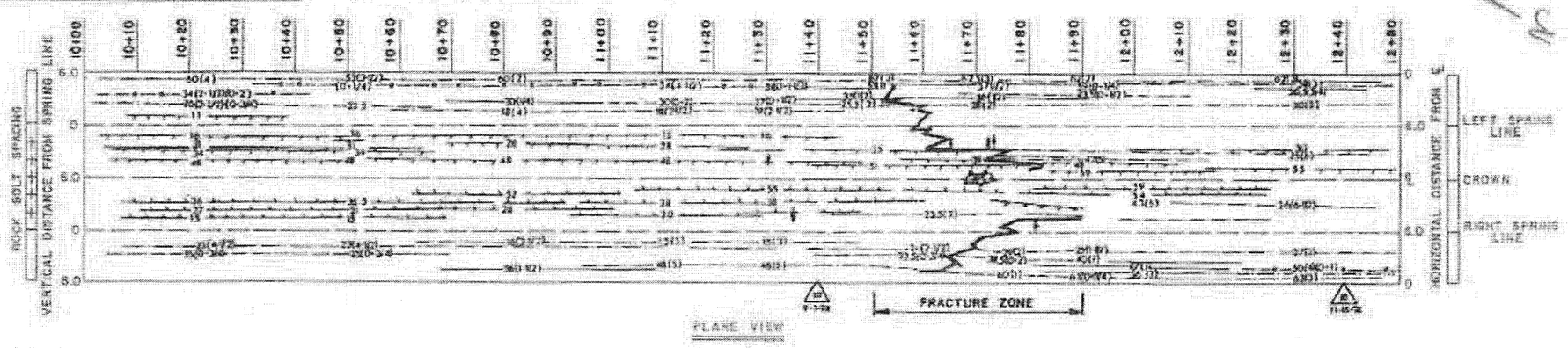
Figure 2.5-47 (Sheet 19 of 24)

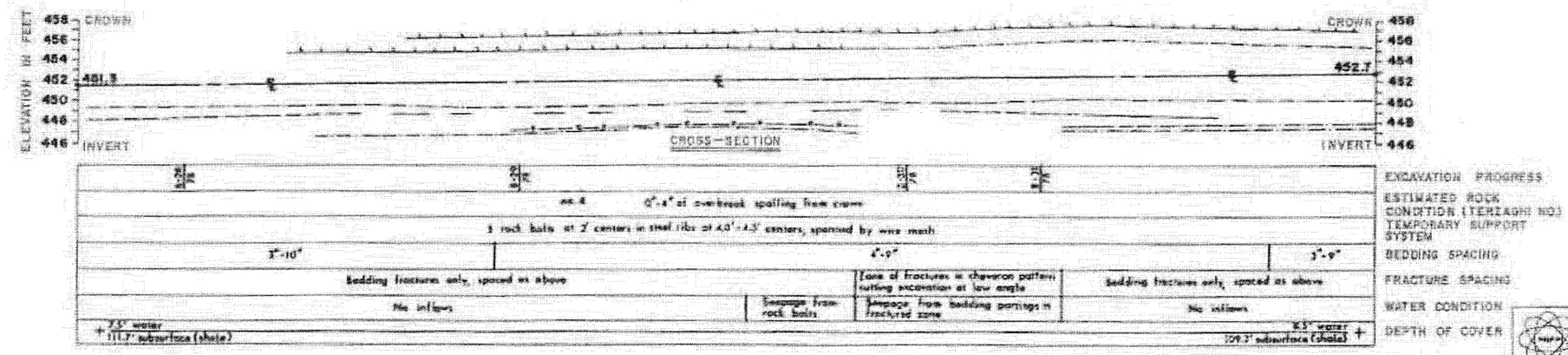


SYMBOLS

- HARD, TAN, BROWN, CHERTY, IRON BED OR LAMINAE
- DISCONTINUOUS IRON BED
- HARD, LIGHT GREY, SANDY SHALE TO SILTSTONE BED
- DISCONTINUOUS IRON BED WITHIN GREY BED
- FRACTURE
- FAULT
- BEDDING PARTING
- VERTICAL JOINT
- INCLINED JOINT
- BEDDING, STRIKE AND DIP
- MOISTURE ALONG BEDDING PARTING
- SEEPAGE FROM FEATURE
- OVEREXCAVATION OR OVERBREAK ZONE, MAXIMUM AMOUNT SHOWN
- METHANE GAS, MAXIMUM PERCENT L.E.L. WITH DATE OF OCCURRENCE

Note:
Number(s) in parentheses indicates bed thickness.
Number preceding parenthesis indicates inches above or below spring line at station of measurement.





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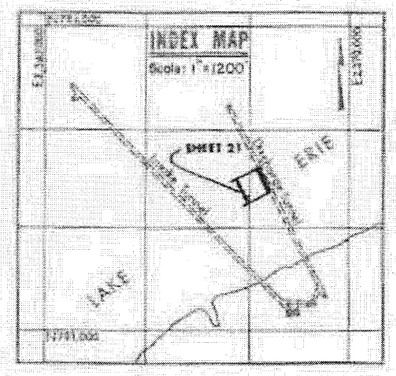
PERRY NUCLEAR POWER PLANT

Geologic Map of Tunnel Excavations

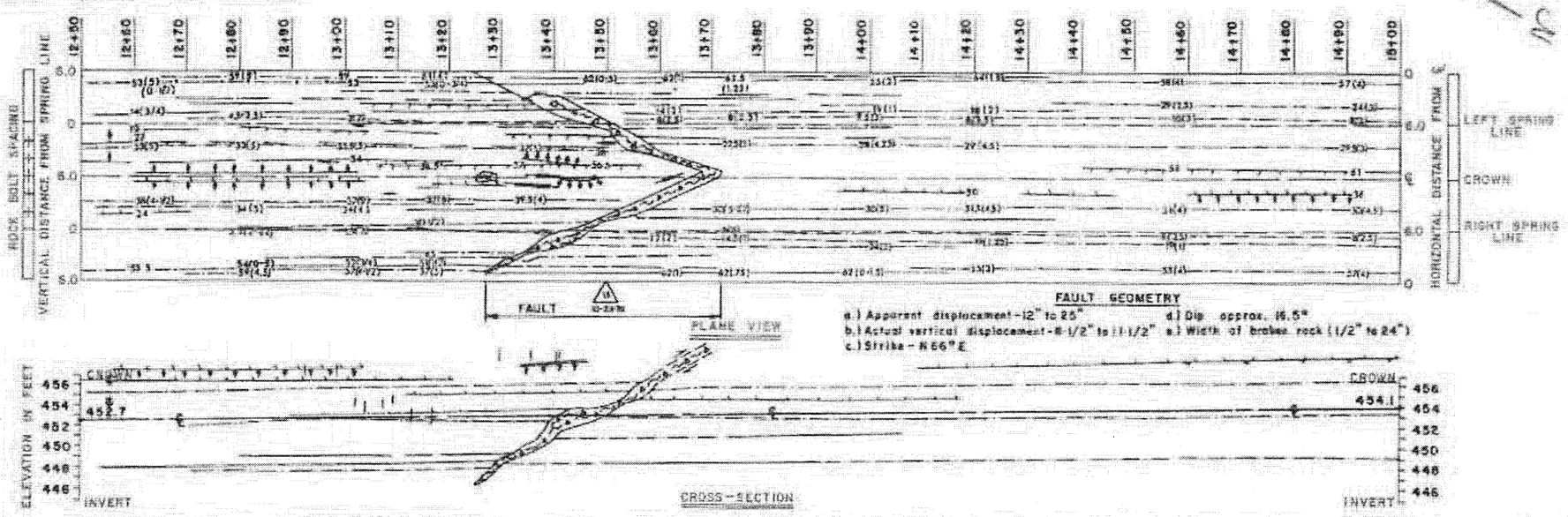
Figure 2.5-47 (Sheet 20 of 24)



SYMBOLS

- HARD, TAN, BROWN, CLAYEY, IRON BED OR LAMINAE
- DISCONTINUOUS IRON BED
- HARD, LIGHT GREY, SANDY SHALE TO SILTSTONE BED
- DISCONTINUOUS IRON BED WITHIN GREY BED
- FRACTURE
- FAULT (with sense of motion)
- BEDDING PARTING
- VERTICAL JOINT
- INCLINED JOINT
- BEDDING, STRIKE AND DIP
- MOISTURE ALONG BEDDING PARTING
- SEEPAGE FROM FEATURE
- OVEREXCAVATION OR OVERBREAK ZONE, MAXIMUM AMOUNT SHOWN
- METHANE GAS, MAXIMUM PERCENT L.E.L. WITH DATE OF OCCURRENCE

* Note: Number(s) in parentheses indicates bed thickness. Number preceding parenthesis indicates inches above or below spring line at station of measurement.



FAULT GEOMETRY

a.) Apparent displacement - 12" to 25"
b.) Actual vertical displacement - 8-1/2" to 11-1/2"
c.) Strike - N66°E
d.) Dip approx. 16.5°
e.) Width of broken rock (1/2" to 24")

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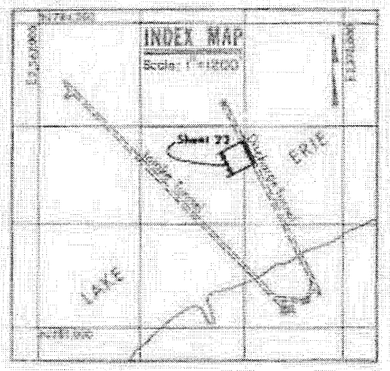
PERRY NUCLEAR POWER PLANT

Geologic Map of Tunnel Excavations

Figure 2.5-47 (Sheet 21 of 24)



SYMBOLS

- HARD, TAN, BROWN, CHERTY, IRON BED OR LAMINAE
- DISCONTINUOUS IRON BED
- HARD, LIGHT GREY, SANDY SHALE TO SILTSTONE BED
- DISCONTINUOUS IRON BED WITHIN GREY BED
- FRACTURE
- FAULT (with sense of motion)
- BEDDING PARTING
- VERTICAL JOINT
- INCLINED JOINT
- BEDDING, STRIKE AND DIP
- MOISTURE ALONG BEDDING PARTING
- SEEPAGE FROM FEATURE
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- METHANE GAS, MAXIMUM PERCENT L.E.L. WITH DATE OF OCCURRENCE

* Note:
Number(s) in parentheses indicates bed thickness
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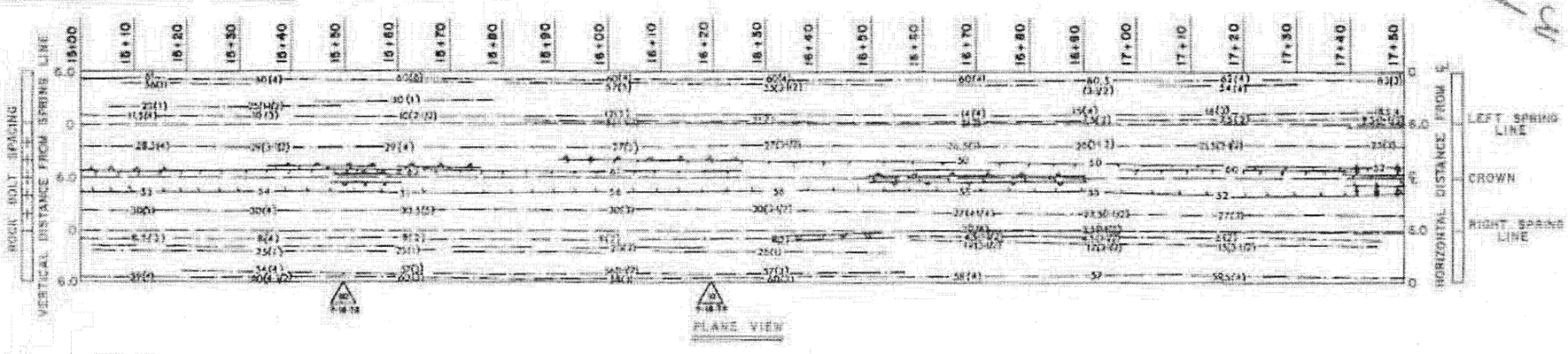
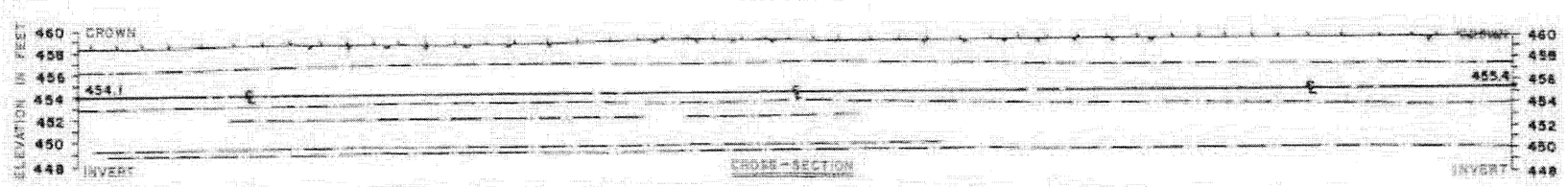
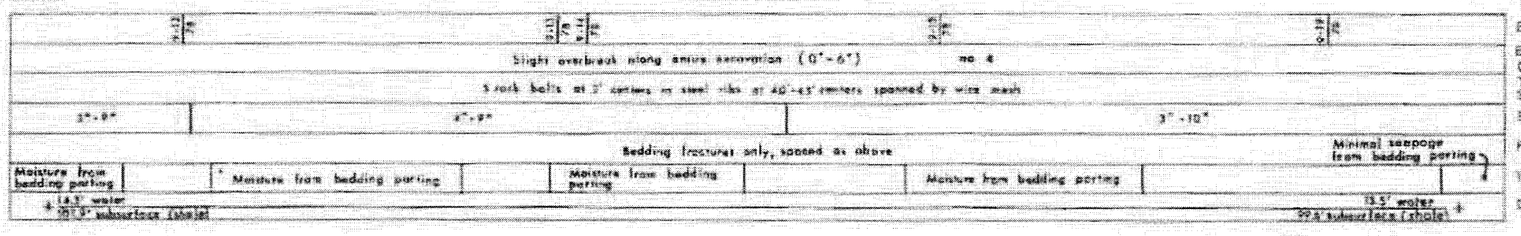


PLAN VIEW



CROSS-SECTION

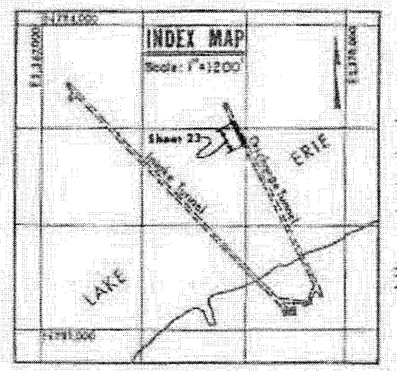


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Geologic Map of Tunnel Excavations

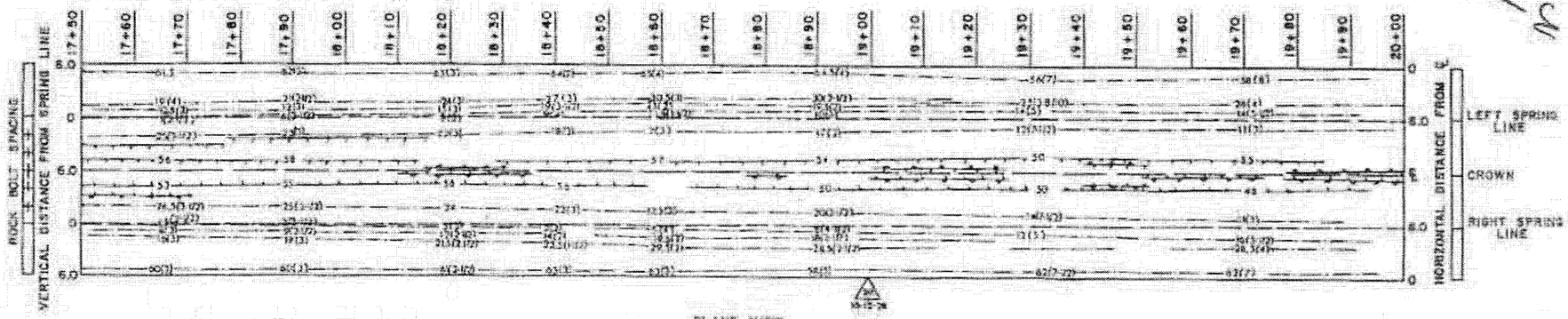
Figure 2.5-47 (Sheet 22 of 24)



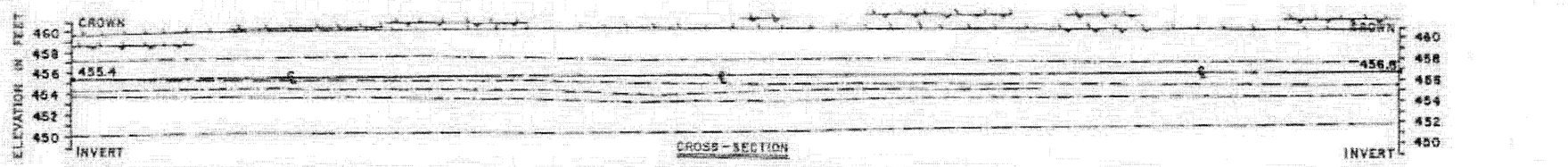
SYMBOLS

- HARD, TAN, BROWN, CHERTY, IRON BED OR LAMINAE
- DISCONTINUOUS IRON BED
- HARD, LIGHT GREY, SANDY SHALE TO SILTSTONE BED
- DISCONTINUOUS IRON BED WITHIN GREY BED
- FRACTURE
- FAULT
- BEDDING PARTING
- VERTICAL JOINT
- INCLINED JOINT
- BEDDING, STRIKE AND DIP
- MOISTURE ALONG BEDDING PARTING
- SEEPAGE FROM FEATURE
- OVEREXCAVATION OR OVERBREAK ZONE, MAXIMUM AMOUNT SHOWN
- METHANE GAS, MAXIMUM PERCENT L.E.L. WITH DATE OF OCCURRENCE

* Note: Number(s) in parentheses indicates bed thickness. Number preceding parenthesis indicates inches above or below spring line at station of measurement.



PLANE VIEW



CROSS-SECTION

EXCAVATION PROGRESS	
ESTIMATED ROCK CONDITION (TERZAGHI NO.)	no. 4
TEMPORARY SUPPORT SYSTEM	5 rock bolts at 3' centers in steel ribs at 4.0'-4.5' centers, spanned by wire mesh
BEDDING SPACING	3"-10" / 4"-12"
FRACTURE SPACING	Moisture from bedding partings / Bedding fractures only, spaced as above
WATER CONDITION	Moisture from bedding partings / Moisture from bedding partings / Moisture from bedding partings
DEPTH OF COVER	15.3' water, 79.6' bedrock (max.) / 18.2' water, 55.2' bedrock (max.)

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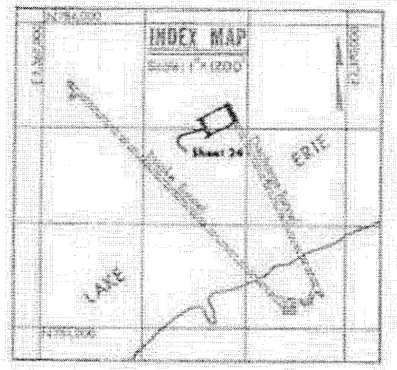
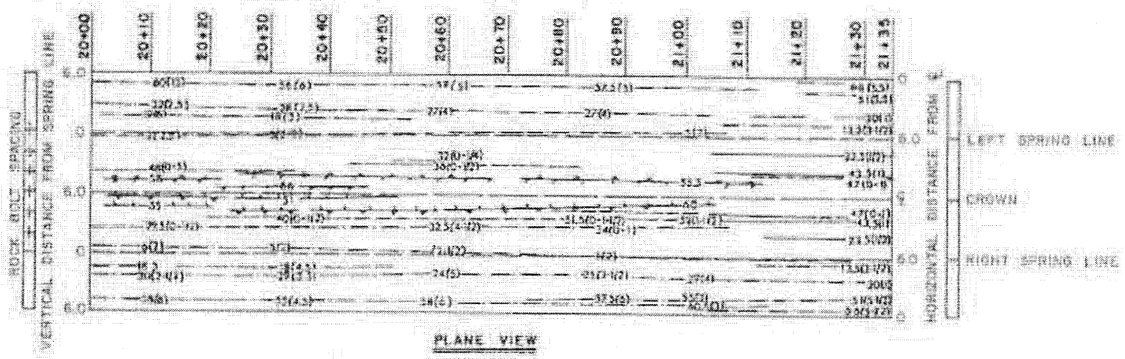
PERRY NUCLEAR POWER PLANT

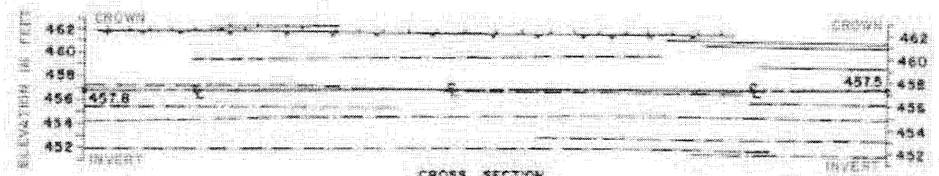
Geologic Map of Tunnel Excavations

Figure 2.5-47 (Sheet 23 of 26)

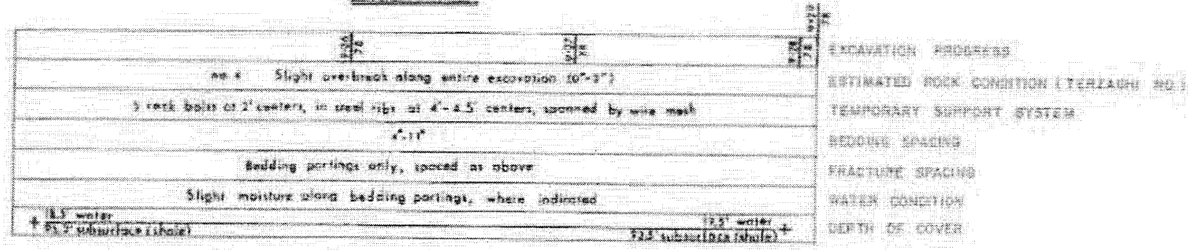




PLANE VIEW



CROSS SECTION



SYMBOLS

- 4 (½)" — HARD, TAN, BROWN, CHERTY, IRON BED OR LAMINAE
- 22 (0-2)" — DISCONTINUOUS IRON BED
- 12 (0)" — HARD, LIGHT GREY, SANDY SHALE TO SILTSTONE BED
- 22 (0-2)" — DISCONTINUOUS IRON BED WITHIN GREY BED
- FRACTURE
- FAULT
- BEDDING PARTING
- VERTICAL JOINT
- INCLINED JOINT
- BEDDING, STRIKE AND DIP
- MOISTURE ALONG BEDDING PARTING
- SEEPAGE FROM FEATURE
- OVEREXCAVATION OR OVERBREAK ZONE, MAXIMUM AMOUNT SHOWN

Note:
Number(s) in parentheses indicates bed thickness.
Number preceding parenthesis indicates inches above or below spring line or station of measurement.

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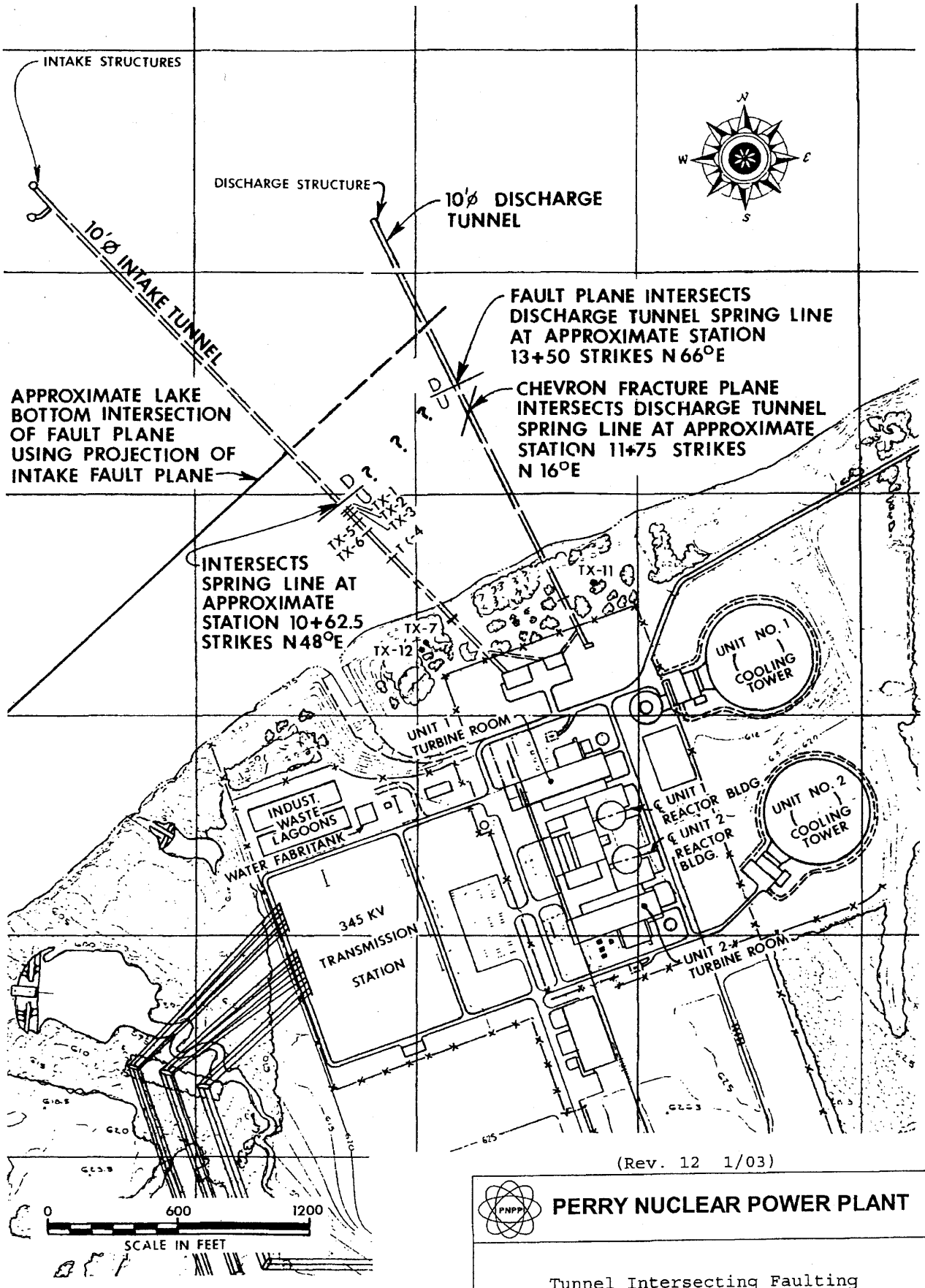
PERRY NUCLEAR POWER PLANT

Geologic Map of Tunnel Excavations

Figure 2.5-47 (Sheet 24 of 24)



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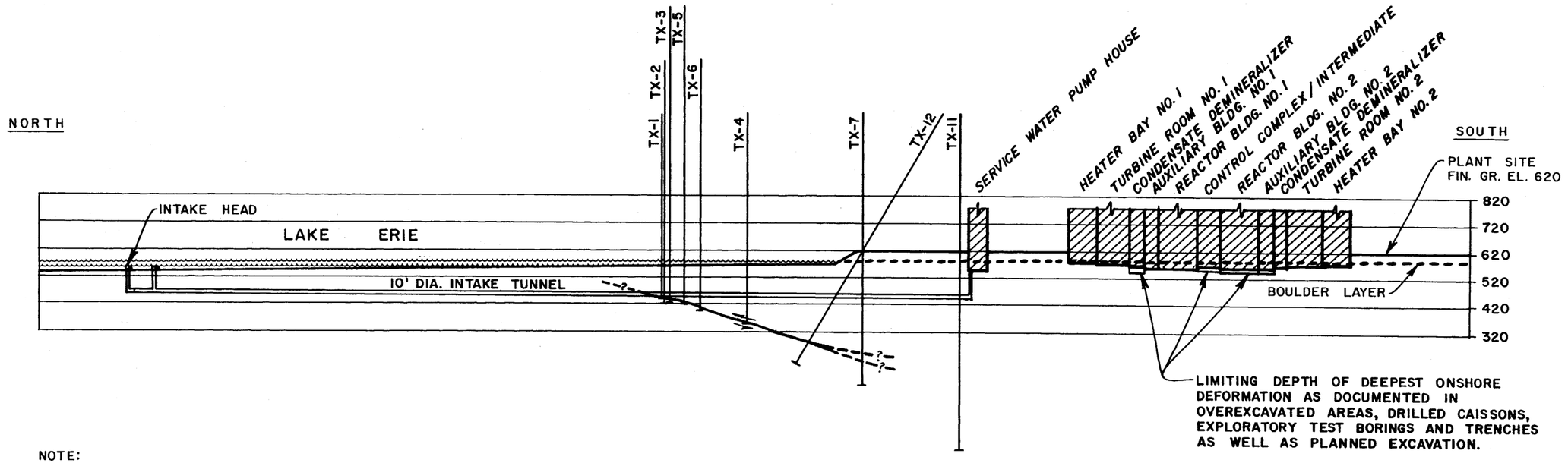
PERRY NUCLEAR POWER PLANT

Tunnel Intersecting Faulting

Figure 2.5-48



NOTE:
PLANNED EXCAVATION LIMITS ARE SHOWN BY DIAGONAL PATTERN, AND OVEREXCAVATION BY STIPPLED PATTERN.

400 0 400 800
SCALE IN FEET

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PERRY NUCLEAR POWER PLANT

Schematic Northwest - Southeast Cross Section

Figure 2.5-49